

Flight, November 11, 1911.

# FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 150. (No. 45. Vol. III.)

NOVEMBER 11, 1911.

[Registered at the G.P.O.  
as a Newspaper.]

[Weekly, Price 1d.  
Post Free, 1½d.]



Mr. W. H. Ewen's start for his recent Lanark-Edinburgh flight on his 28-h.p. Anzani-engined Deperdussin monoplane.

# EDITORIAL COMMENT.

## A Quaintly-Conceived Scheme.

Before us lies the draft prospectus of the Imperial Aero Club—very much in the draft, for although its inner pages contain the anticipatory particulars of a scheme more ambitious than anything that has gone before in the world of aviation, the title-page is almost completely a blank. It has taken us a little time to grasp all the possibilities of the scheme. No names of President, Vice-President, Committee, Secretary or other officials, no indication of its *locale*, except that in the meantime its headquarters are at Port Meadow, Oxford—literally nothing to imbue us with confidence in its organisers and its propaganda. The prospectus gravely informs that the Imperial Aero Club has been formed—to encourage aviation in the United Kingdom. "It is well known," says this precious document, "that the great difficulty in founding a representative successful and popular aviation club lies in the fact that those interested in aviation belonging to the upper classes have been few in number hitherto, whilst those of the middle and lower classes are much more numerous, and generally form the majority amongst members of aviation clubs, so that gentlemen of good social position may find themselves in uncongenial society, and as a rule carefully stay away from such club rooms owing to the very mixed society and impossible people who have been admitted. The founders of the Imperial Aero Club, desiring to avoid forming another 'Aviation Trade Thieves' Kitchen,' propose in the new club to separate the members into two classes, each having its separate club house, but all being equal at the aviation ground of the club."

We are sadly afraid this will not work, for it is quite conceivable that although these nasty middle and lower class people may be carefully segregated in their own club house, if they are allowed loose at all times on the club's common aviation ground, some of them will get between the wind and the gentility of the "gentlemen of good social position"—and then what *would* happen? The bare thought of such a thing makes us shudder! It is true that the trouble might be minimised by a liberal use of disinfectants and *eau de Cologne*, but then prevention is such a lot better than cure, and it does seem to us that it would be far better that these low persons should be confined to their own "Thieves' Kitchens" and that the gilded darlings of the prospectus' "upper classes" should have the promised Elysium all to themselves. Having been duly impressed with the high tone of the new club, we proceed to wade through several pages of this wonderful document—and, truly, there never was such a club as this will be—until we come to certain paragraphs which set forth that the club intends to establish a school of aviation, in which members will be taught to fly in return for fees which, as set forth, are something more than the current market rate. Immediately we begin to wonder whether there is not a nigger in the wood-pile here, and if the new club of high-sounding title and exclusive *personnel* is simply a commercial enterprise, to wit a common or garden flying school out to make money by teaching the art of aviation. But farther on we find that this most marvellous club proposes—proposes is an excellent word to use under the circumstances—to offer prizes of £20,000, £10,000, and such like sums, showing that whatever its faults may turn out to be meanness is not going to be one of them. True, the prospectus cautiously informs us that "it is anticipated" that these handsome sums can

be raised—we wonder whether it will be on the family plate of the "gentlemen of good social position"—which is rather different to having the money in hand. But still, people do all kinds of wonderful things nowadays—they even fly kites, and in the City, too.

Then the Imperial Aero Club intends to be quite patriotic as well as *very* select. We do not quite like that word select—it sounds so horribly suburban, and quite like the sort of thing one might hear in one of those Thieves' Kitchens which are miscalled aviation clubs—but in our middle-class ignorance we know no better. But let us get back to the club. It proposes—proposes, again!—to form a "National Air Battalion," whose principle duty will be to wear a uniform of brown leather tunic and puttees. What the rest of the costume will be is left to the imagination, but in order that the social standing of the members may not suffer degradation through looking too much like those horrid middle and lower-class aviators it may be hazarded that they will wear kilts.

Unfortunately we have not sufficient space at our command to do adequate justice to this really humorous prospectus, but we may note in conclusion that if any of our readers desire to serve on the executive committee, for which they will be paid—the club again proposes—£300 a year, all they have to do, according to an advertisement appearing in one of the London dailies, is to write, enclosing £1,000 by way of director's qualification, to a box number at the offices of the journal in which the advertisement appeared. Our space is valuable, so we refrain from quoting the advertisement in question, but if any reader of really good social standing would like to take advantage of the offer, we will gladly send him on the address.

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"Is Aviation Immoral?" In a Dundee journal, a correspondent who signs himself "Terra Firma" asks:

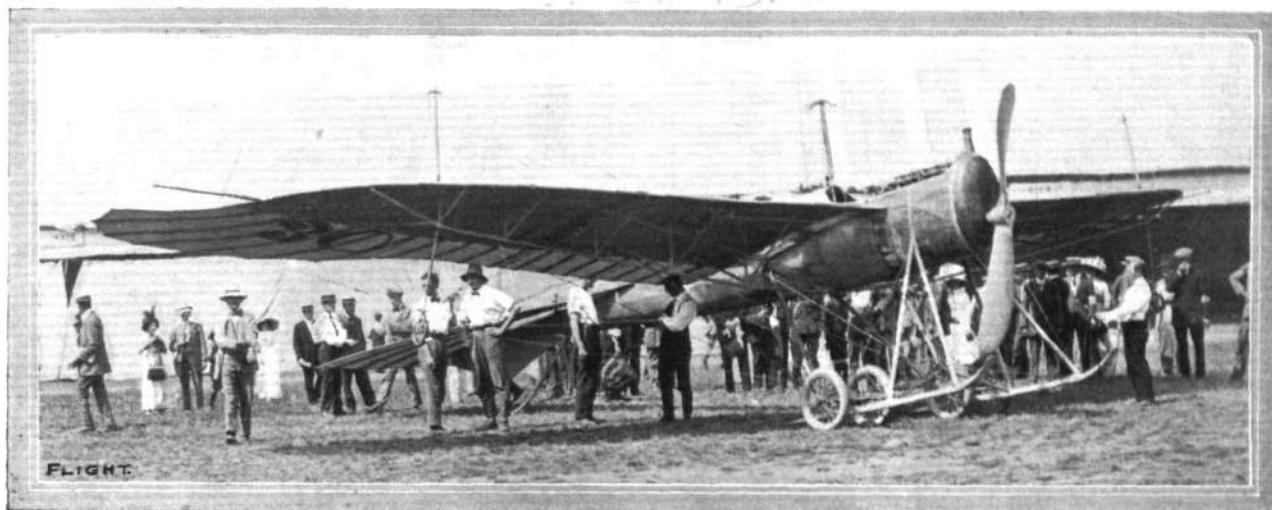
"Is it moral, by the bait of considerable sums of money and of prizes to lure young men, fiery with intrepidity, to a death, if not certain, at least very probable?" "Is it not cruel to tempt foolhardy men to their deaths by these gilded baits?" "Are we to demand gladiatorial sacrifice from our aviators?"

These are some of the passages in a letter which is a veritable masterpiece of hysteria and which we have neither space nor inclination to quote in full. We are not concerned to even attempt to answer in detail the questions propounded by the writer, but we still stretch the point far enough to say that, in Parliamentary language, the answer to each is in the negative. We do dispute, however, the premises upon which the queries are founded. In the first place, the records of contests for these considerable sums of money show that death as the portion of the competitors is neither certain nor in the least degree probable. That being so, there can be no question of "luring foolhardy men to their death, &c." The "gladiatorial sacrifice" business we can dismiss as a mere rhetorical flight—the only kind of flight, apparently, of which "Terra Firma" has any close knowledge. It is inevitable that a science like that of flight should have its opponents, and, on the whole, we prefer this sort of attack to the more insidious kind born of some knowledge and a good deal of reasoning power. The one may produce some effect, but the other is harmless from the ignorance displayed in its violence.

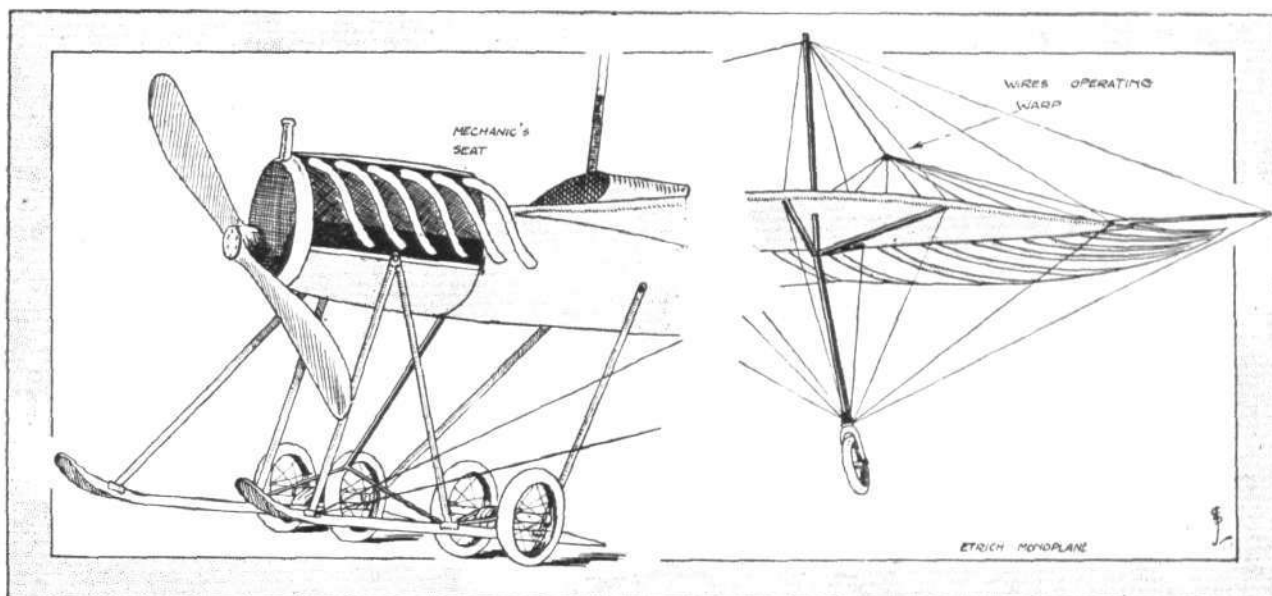
## THE ETRICH MONOPLANE.

To Igo Etrich must be given a foremost place amongst those pioneers who, not content merely with constructing a machine that

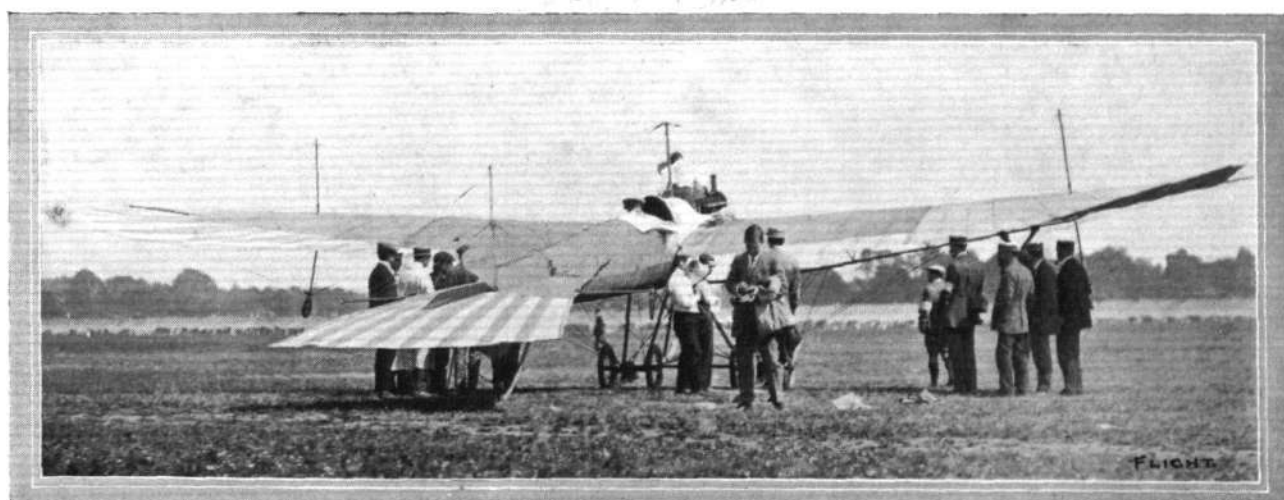
would fly, probed more deeply into the problem of flight in order to evolve an aeroplane naturally stable in a disturbed medium.



The 130-h.p. Etrich monoplane photographed from the front.

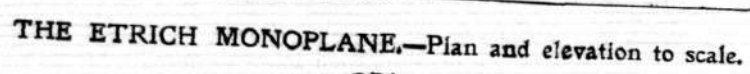


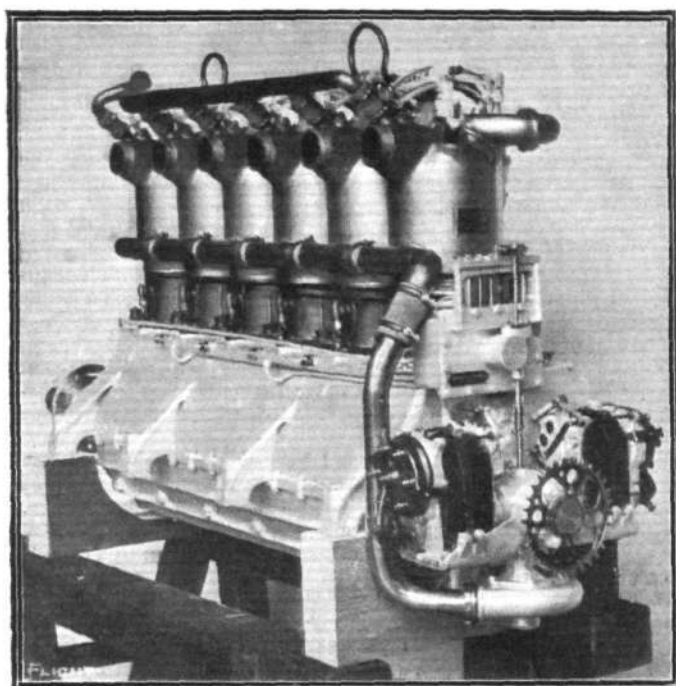
DETAILS OF THE ETRICH MONOPLANE.—On the left the landing carriage, somewhat reminiscent of Henry-Farman practice; on the right the details of the wing tip, showing a portion of the steel bridge-like structure which strengthens the wings, and the fitting of the small wheel which prevents damage occurring to the tip of the wing.



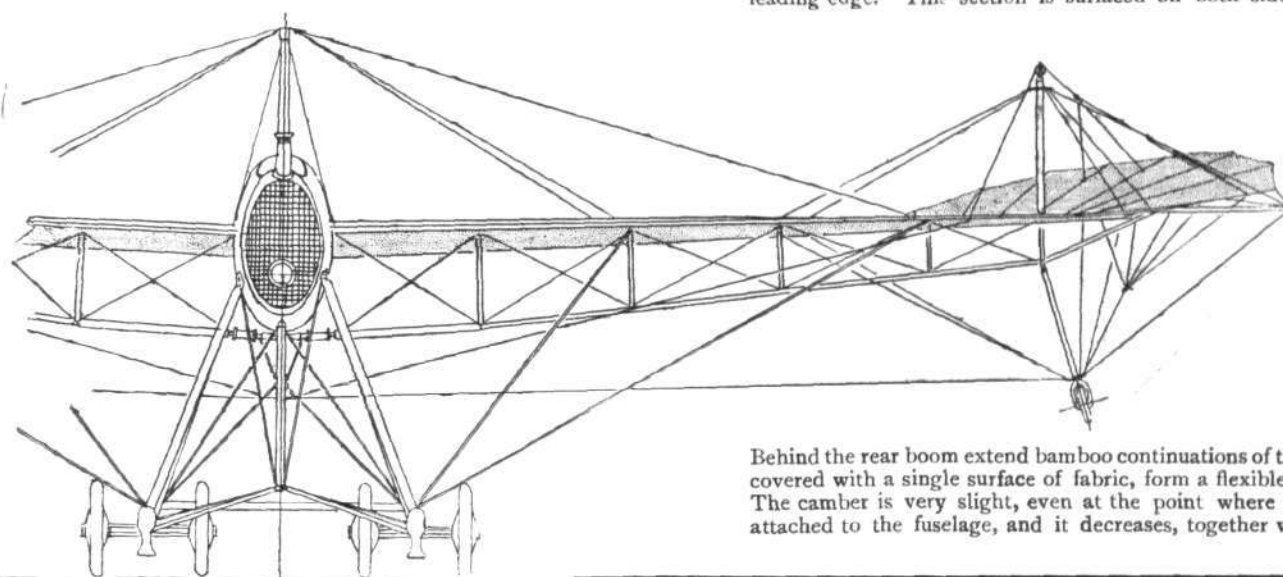
Rear view of the Etrich monoplane.







The motor employed on the 3-seater Etrich monoplane—a 6-cyl. Austro-Daimler of 130-h.p.



Front elevation of the Etrich monoplane.

Working on entirely independent lines, the researches of the three pioneers—Dunne and Weiss in England, and Etrich in Austria—have all resulted in the discovery of the improvement of longitudinal stability by the incorporation of the negatively-incident thrown-back wing tip.

It must be admitted, however, that Etrich has moved a step in advance of his contemporaries on this side of the Channel for, whereas all three have demonstrated the effectiveness of their inferences as applied to practical man-lifting machines, the Austrian inventor has succeeded in establishing the manufacture of his monoplanes on a sound commercial basis. Like the famous Wright Bros., Etrich commenced his experiments by the study of gliding flight in the year 1898 when he acquired a Lilienthal glider. Pursuing the investigations commenced by the latter, he delved into every subject that would be likely to throw light on the problem he had set himself out to solve. He studied the propulsive organs of every kind of flying animal—birds, insects, bats, flying-fish, and even went to the extent of investigating the different species of

flying seeds, those of the sycamore and pine, for instance, which are so abundant in the vegetable kingdom.

This preparatory work led him to try a glider of his own design, very ingeniously constructed, and of such an original plan form, that at that time it was considered bordering on the fantastical. Experiments with the glider commenced in 1904 at Trantenau, and during the year glides of up to three-quarters of a mile in length were made.

It was not until 1909 that a power-driven aeroplane was evolved, which, piloted by Illner, soon captured all existing Austrian records. Since then it has undergone improvement after improvement, and to-day is universally ranked among the most successful and most scientifically designed of air-craft.

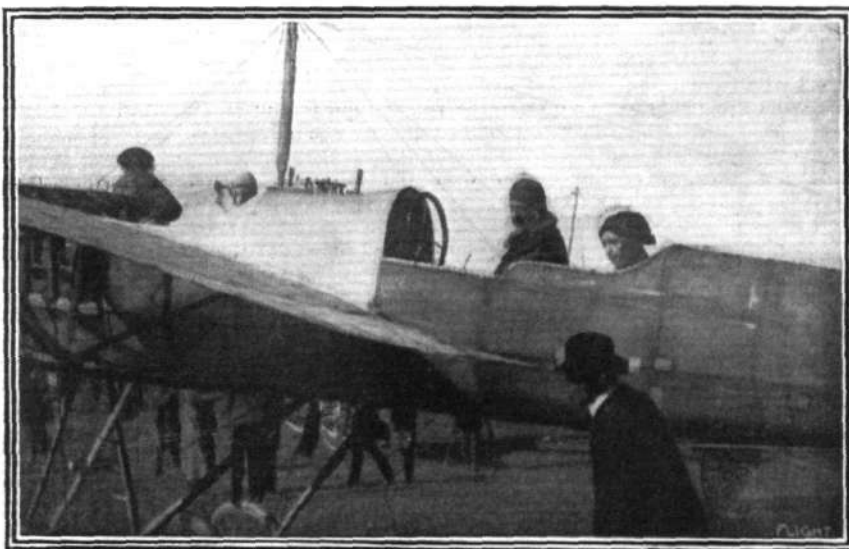
Its appearance in England, on the occasion of the Circuit of Britain, was a revelation to our English constructors, and its influence will doubtless have an effect on current design.

The body of the Etrich monoplane is a fish-shaped structure of steel tubing cross-braced by wire. From the elliptical radiator, which is mounted at its forward end, the body deepens and widens in the vicinity of the pilot's seat, and from that point, still preserving its elliptical cross-section, gradually tapers away to the tail, where it terminates in a vertical line. To avoid internal disturbance in the air discharge, the body is covered in front with metal sheeting and aft of the pilot's cockpit with fabric.

In the matter of under-carriage, the Etrich monoplane has undergone repeated modification in the past, but it seems as though the constructor has definitely decided that one modelled upon Henry Farman lines is most suitable—at least, for the present.

As the main planes form the most distinct feature of the machine, they merit careful study. Reference to the accompanying diagram (Fig. 1) will facilitate description. The front part of each wing, shaded in the sketch, is rigidly constructed of webbed ribs, built over three longitudinal spars, of which the forward one forms the leading edge. This section is surfaced on both sides with fabric.

Behind the rear boom extend bamboo continuations of the ribs, which, covered with a single surface of fabric, form a flexible trailing edge. The camber is very slight, even at the point where the wings are attached to the fuselage, and it decreases, together with the angle



The cockpit of the Etrich monoplane, showing accommodation for mechanic, pilot and passenger.

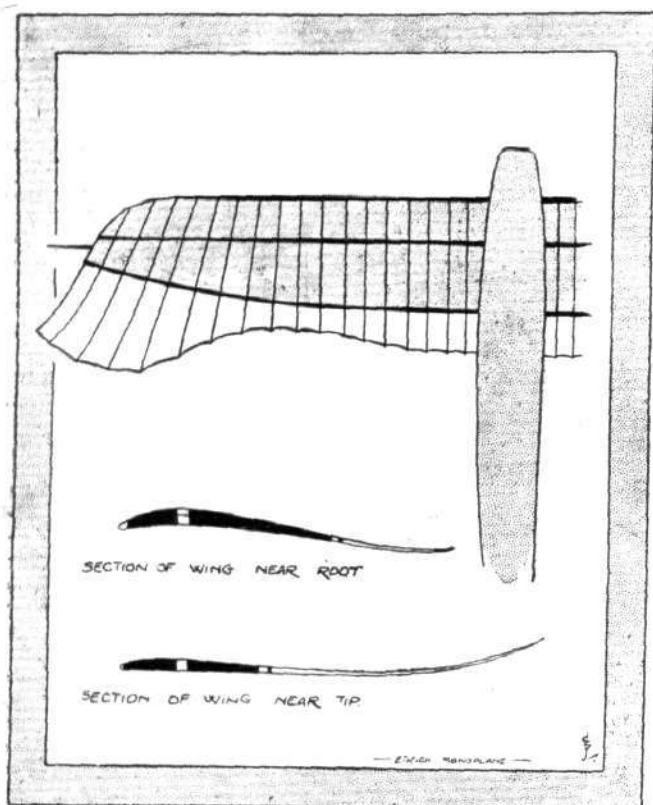


Diagram illustrating the arrangement of spars and ribs in the wing construction. The shaded portion indicates the rigid portion of the wings; the trailing edge, unshaded, is flexible.

of incidence, towards the tip, which is flat and presents no incidence to the direction of flight.

The flexible wing-tips, however, are turned up at the rear, and so give the end of the wing an effective negative angle of incidence. It is to this feature that the machine owes its pronounced degree of

natural stability. Lateral balance is maintained by raising either wing-tip by means of a cable, which, passing over a pulley situated at the top of the king-post, divides up into eight wires connected to the flexible extremities of the wing. A cable passing over the lower end of the king-post lowers the opposite tip a corresponding amount.

Enormous strength is imparted to the wing by a bridge-like structure of steel tubing, which embraces the three wing-spars, and is attached below the under surface—strength which renders them capable of withstanding strains many times in excess of those that they are likely to be called upon to bear in flight. The wire-bracing throughout is carried out in a most thorough and conscientious manner; for what part of an aeroplane, especially on such a heavy example, deserves more careful attention than the bracing of those surfaces which support and control it?

A small wheel mounted at the lower extremity of the king-post protects the wing-tip from contact with the ground, and small transparent panes are provided in the wings to enable the pilot to see what is directly beneath him.

The tail surface is fan-shaped and balanced, and pivots in one unit about a horizontal axis. Forward of the axis the movement of the surface is "damped" by the introduction of a spring device, which prevents a purely rocking motion, as in the case of the Bristol elevator, and allows the rear edge of the elevator to flex to a certain extent.

Two small triangular vertical rudders, one above and the other below the horizontal tail plane, are hinged to the rear edges of two triangular stabilizing fins, and possess the function of directing the machine to the right or left at the will of the pilot, who operates them by means of pedals.

Elevation and lateral balance are controlled by a rotatable hand-wheel, mounted at the top of a vertical column.

The manufacture of the Etrich monoplane has been standardized into four types, a two-seater touring machine of 65-h.p., a single-seater racer of similar power, a 120-h.p. three-seater touring machine, and a similarly engined racer to carry two.

It was to the latter type that the Etrich monoplane representing Austria in the Circuit of Britain belonged. Behind the 6-cylinder Austro-Daimler motor was a small cockpit, for the accommodation of the mechanic whose duty it was to attend to the engine. Communication was carried on with the pilot by means of a speaking tube connected to specially-designed helmets.

As for the machine's future, what but success can be expected to attend the efforts of one who has already safely piloted into commercial waters such a clever synthesis of convictions resulting from serious personal study?

## ARTILLERY AND THE AEROPLANE.

IN an article in the October issue of the *Journal of the Royal Artillery*, Major H. G. Hawkins, late R.A., who has made a serious study of the airship and aeroplane from a military point of view, discusses the progress made during the past year. He starts by pointing out that the improvement of the aeroplane makes it look now as if all tactical use of the dirigible would be impossible except for night raids, undertaken with some definite object, such as the destruction of a large dock or railway station. The dirigible would be at the mercy of the aeroplane by day, and at night, too, if lit up by searchlights. This means that no medium guns, 4" to 6", that can send their shell (provided with arrangements for exploding the gas-bag) to a great height are now required, and, although only light guns are likely to be required, the recent increases in speed make the problem of attacking aeroplanes a difficult one indeed.

After comparing the cost of aeroplanes with a cavalry squadron, and the advantages of the former over the latter as scouts, Major Hawkins goes on to deal with the vulnerability of aeroplanes. He points out that the machine is liable to come to grief, first, by losing stability and upsetting, or by upsetting as the result of injury of its vital parts, while, although its stability may not be affected, damage to its engine or propeller may render a descent necessary. Experiments should be carried out as soon as possible by the aid of towed kites and gliders to discover the effects of the detonation by explosives near an aeroplane in flight. The "air-hole" formed by the explosion of an H.E. shell in mid-air would certainly differ in characteristics from an ordinary "air-hole." Although it would open and close very rapidly, so that its existence as a hole might not last long enough to appreciably affect the trajectory of an aeroplane, there would be a violent local disturbance of the equilibrium of the air fluid, and the air waves would be so rapid that, if the machine was near enough, there would be no time for it to yield to them as a whole, and if the suddenly-developed pressure was too great for them, the planes must give way. It should be easy to get a measure of these pressures by experiment for any particular shell, and so decide whether theoretically they are

sufficient to disab the aeroplane at a distance of 100 yards from the point of burst. It seems to the writer that there is but little to hope for in the direction of upsetting the equilibrium of an aeroplane by shell fire, and but little chance of wrecking the planes by H.E. shell of small calibre. Then there is nothing but shrapnel.

Another point which is well worthy of experiment is with regard to the vulnerability of propellers. It is certain that the pilot may be disabled and control wires cut, but, as the supporting surfaces will probably be of metal in future, a few holes through them would make no difference, unless stays or struts were cut. On the whole, the gunner would hope that a well-placed shrapnel would find sufficient vulnerable points to bring the flyer down. A great disadvantage of shrapnel is the unavoidable return to earth of its bullets and pieces.

Assuming that the military aeroplane of the near future does not travel at more than sixty miles an hour, the problem of hitting it is enormously difficult, and the writer confesses that he can only see one fairly certain method, and that depends on the invention of an autosight.

Major Hawkins concludes by pointing out that air-craft are bound to be armed with some projectile of the bomb order, as well as with machine-guns or small arms, to fight one another.

### The Development of the Aeroplane.

AN interesting and instructive lecture on the "Development of the Aeroplane" was given on November 4th, by Captain J. G. Sinclair, to the boys at Ellesmere College, Salop. The lecture was illustrated by 120 lantern slides taken from photos which were exhibited for the first time anywhere. The photos covered all the developments in aeroplaning from the early days till quite recently, and included the cross-channel flight of Blériot and the feats of Beaumont flying round England. A few visitors were present, and a request was made that the photos should be shown to a larger audience at a later date.



## SOARING.—I.

So much interest and curiosity has been aroused by the experiments of the Wright brothers in their secluded although open-air laboratory on the sand dunes of North Carolina that it seems necessary to devote some little space to an explanation of certain fundamental principles associated with the art that Wilbur Wright is now practising, and also to endeavour to remove the confusion of thought that appears to exist in some minds as to what it is exactly that the Wright brothers are doing. Unfortunately, the terminology of aviation is still rather carelessly applied, and the present attempts of the Wright Brothers to soar is indiscriminately referred to as gliding and flying by those who are not fully acquainted with the technical aspects of the case.

All sustained motion in the air is, of course, flying of sorts, but there is an obvious difference between flying with an engine and flying without. Moreover, in this latter kind of flight there is an equally obvious difference between soaring indefinitely and gliding to earth.

When the Wright Brothers first pitched their camp on these same sands in 1900—eleven years ago, just think of it—their objective was to learn the art of gliding. They chose the spot for a variety of reasons, two of which were the presence of suitable natural hills or sand dunes and the prevalence of suitable winds, while another was the comparative isolation of the spot. When they had built their glider they took it to the top of the hill on a day when the wind was blowing steadily at perhaps 15 miles an hour, and Wilbur Wright or his brother would then lie prone on the lower deck while his assistants would run with the machine into the teeth of the wind and leave go as soon as they could feel its weight become air-borne. Thence, the pilot would skim through the air down the hill side, keeping always only a little above the ground until experience gave greater confidence and more elaborate performances could be attempted. Always, however, the object of the trials was to glide, that is to say, to fly down hill to earth, using the force of gravity in lieu of an engine.

When in the course of time they had satisfied themselves that they had mastered the art of gliding, the Wright Brothers

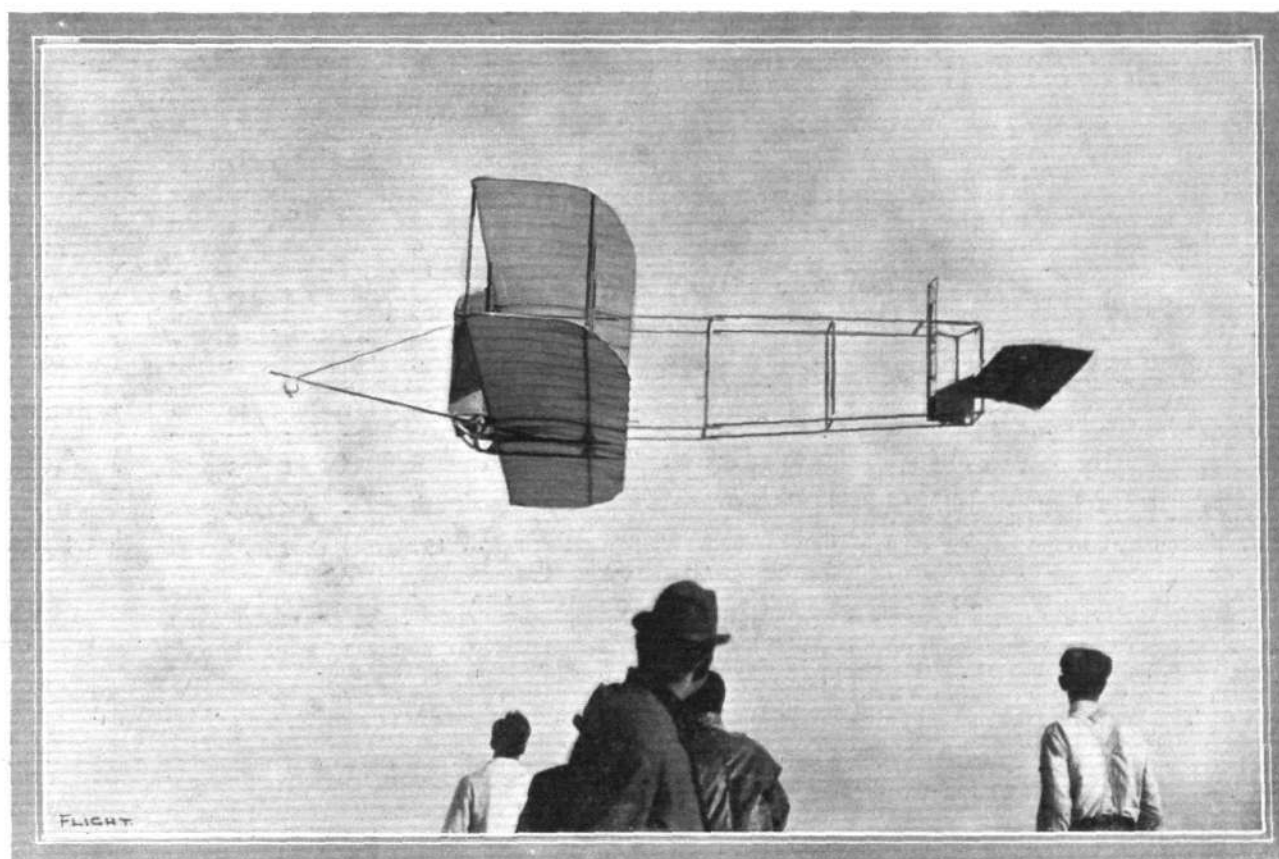
proceeded to build an engine for their machine, and therewith began to practise the art of flying as it is ordinarily understood at the present day. Fundamentally, the aeroplane, regarded as a flying machine as distinct from a glider, possesses the power of rising from level ground and proceeding in any direction through the air for a period that is only limited by the available fuel supply and the continued good behaviour of the engine. A glider, on the other hand, must start from an elevated position, and can only proceed against the wind and on a downward path.

The reason for the necessity of proceeding against the wind is of course that the supporting force is a function of the relative velocity between the machine and the air, the effective value of which is for the most part due to the positive speed of the wind. In many cases the gliding speed relative to the earth would only be 5 or 6 miles an hour, although the virtual flight speed of the machine is 20 or 25 miles an hour through the wind.

Reflection on this latter consideration alone serves to show that if the wind itself contributed the entire flight velocity required that the aeroplane would appear stationary to the eye although virtually it would be flying at, say, 25 miles an hour. This is the condition known as soaring, and is the phenomenon associated with the flying of kites, which, however, differ materially in their operation, since they need the anchorage of the string in order to prevent them from blowing away. So would the soaring aeroplane blow away, too, were it not intelligently controlled, and it is just this control of the aeroplane that constitutes the principal achievement in the art of soaring that Orville Wright is now practising over the sand dunes of North Carolina.

Even now it may not be altogether clear what soaring means towards progress of aviation, and indeed except so far as any additional experience is necessarily helpful, it is difficult to put a precise purpose on the mere accomplishment. In this connection, however, it may be interesting to make a quotation from a chapter on gliders in the little book entitled "Principles of Flight," which we have just published.

"Soaring is an art that is to all intents and purposes un-



THE WRIGHT GLIDER IN OPERATION BY ORVILLE WRIGHT AT KILL DEVIL HILL, NORTH CALIFORNIA.—The photograph was taken from beneath, during the time when the glider was stationary in the air.

learned by man, although the greater birds possess it to perfection. A few instances are on record of experimenters with gliders having been held aloft in one position for brief intervals of time, but there has been no conscious development of the art of soaring, from which, however, it is plausible to expect something in future when the art of aviation and knowledge of the atmosphere have further progressed.

"Those who realise how much the larger species of birds accomplish without the expenditure of muscular energy must see that there is a field of the greatest possible importance

that is as yet totally unexplored. This is not a suggestion that aeroplanes will fly about without engines; on the contrary, they must always have engines, just as birds must always have muscles. It is a suggestion, however, that a skilful pilot of the future may be able to take advantage of winds and currents in the atmosphere from which those competent in the art of flight to-day are totally unable to make a profit. To this end a wider use of the glider as an introduction to the aeroplane seems highly desirable and especially worthy of encouragement."

## AVERAGE NOVEMBER WEATHER.

By T. F. MANNING.

NOVEMBER's reputation for fogs, which it has appeared to be losing of late years, is fully established by a century's records. The number of lighter fogs is not very much greater, it is true, than that of October and December. But in dense fogs this month is well ahead of all the other months of the year. And while September and October give us morning and evening fogs principally, they are often all-day phenomena in November. In this respect, therefore, it is the worst flying month of the year in the south of England. It has twenty-one times as many dense fogs as June.

Although fogs are associated with calm weather, November is one of the four stormiest months of the year. We get, on an average, twenty-five per cent. more gales than in October, but we are still far short of the maximum, which occurs in January. Comparing November in this matters also with June (the best month) its record of gales shows an increase of 150 per cent.

Severe cold now begins, and during the month there is a fall in mean temperature of no less than six degrees. Usually we have a very cold snap in the period from the 6th to the 12th.

Snow really begins. As was remarked in a preceding article, this is one of the most uncertain of weather phenomena, some winters passing without any considerable fall, and others giving us snow-covered ground for weeks at a stretch. The average for November is less than one fall per annum, the chances being 4 to 3 against it. This is for the whole month, but while snow is comparatively rare during the first two weeks it becomes rather more common in the last two.

Hail is seldom seen, only about one fall occurring in four or five years, and thunder is still more rare, getting down to very near the year's minimum in November.

Cloudy days, of course, are very frequent, but November is not nearly so bad as the three following months. It has fewer rain-days, and less rainfall than October, but nevertheless is among the four worst months in the number of rain-days. We have a very great decrease of sunshine, in London, from the amount registered in October—nearly 50 per cent., while we get only just one-fourth of the sunshine of May, June, or July.

We may compare November, which, taking it all round, must be a very bad flying month, with one apparently best month, June. It will be seen that there is a sad falling off in the quality of the weather, and yet worse is to come, as may be judged from the relative figures for December.

|                                   | June.    | Nov.     | Dec.     |
|-----------------------------------|----------|----------|----------|
| Ten years' gales ...              | 7½       | 19½      | 24       |
| " fogs ...                        | 7½       | 52       | 51       |
| " dense fogs ...                  | ¾        | 13       | 10½      |
| " thunderstorms ...               | 20       | 2        | 1        |
| " hail-storms ...                 | 3½       | 2½       | 3        |
| " snow-falls ...                  | 0        | 7        | 25       |
| " rain-days ...                   | 116      | 139      | 142      |
| Average rainfall (Greenwich) ...  | 2'03 in. | 2'22 in. | 18'3 in. |
| Mean temperature (Greenwich) ...  | 59'4     | 43'5     | 39'9     |
| Hours of sunshine (Greenwich) ... | 196      | 50       | 36       |
| Degree of humidity (Greenwich)... | 73'6     | 87'3     | 88'6     |

Table of Weather Phenomena for November.

The figures show how many times in a hundred years each event occurs.

| Day.         | Gales. | Fog. | Dense Fog. | Snow. | Hail. | Thun-der. | Rain-Days. | Mean Temp. |
|--------------|--------|------|------------|-------|-------|-----------|------------|------------|
| 1 ...        | 6      | 14   | 2          | 1     | 1     | 1         | 47         | 46'7       |
| 2 ...        | 7      | 13   | 4          | 1     | -     | 1         | 49         | 46'5       |
| 3 ...        | 7      | 21   | 5          | -     | 1     | -         | 55         | 46'3       |
| 4 ...        | 5      | 13   | 4          | -     | 1     | -         | 50         | 46'1       |
| 5 ...        | 3      | 17   | 2          | 2     | 1     | -         | 44         | 45'9       |
| 6 ...        | 7      | 20   | 2          | 1     | 1     | -         | 42         | 45'5       |
| 7 ...        | 3      | 23   | 4          | 1     | 1     | 2         | 42         | 45'1       |
| 1st week ... | 38     | 121  | 23         | 6     | 6     | 4         | 329        | —          |
| 8 ...        | 3      | 21   | 6          | 1     | 1     | 1         | 40         | 44'6       |
| 9 ...        | 5      | 19   | 4          | 1     | -     | -         | 40         | 44'0       |
| 10 ...       | 6      | 15   | 5          | 2     | 2     | 2         | 49         | 43'6       |
| 11 ...       | 10     | 18   | 6          | 3     | 1     | -         | 46         | 43'2       |
| 12 ...       | 5      | 24   | 5          | -     | -     | 1         | 38         | 42'9       |
| 13 ...       | 10     | 19   | 4          | 1     | 1     | 1         | 40         | 42'8       |
| 14 ...       | 7      | 18   | 4          | 1     | -     | -         | 44         | 42'6       |
| 2nd week ... | 46     | 134  | 34         | 9     | 5     | 5         | 297        | —          |
| 15 ...       | 7      | 11   | 4          | 2     | -     | -         | 55         | 42'5       |
| 16 ...       | 8      | 18   | 5          | 5     | 1     | 1         | 50         | 42'4       |
| 17 ...       | 5      | 21   | 8          | 4     | -     | -         | 40         | 42'3       |
| 18 ...       | 5      | 20   | 4          | 3     | -     | -         | 44         | 42'2       |
| 19 ...       | 5      | 18   | 6          | 4     | 1     | 1         | 41         | 42'2       |
| 20 ...       | 7      | 14   | 4          | 4     | -     | -         | 41         | 42'1       |
| 21 ...       | 6      | 20   | 6          | 3     | 1     | -         | 46         | 42'1       |
| 3rd week ... | 43     | 122  | 37         | 25    | 3     | 2         | 317        | —          |
| 22 ...       | 6      | 20   | 5          | 4     | 3     | 2         | 46         | 42'2       |
| 23 ...       | 9      | 21   | 8          | 2     | 1     | -         | 41         | 42'1       |
| 24 ...       | 10     | 18   | 7          | 2     | -     | 1         | 54         | 42'1       |
| 25 ...       | 7      | 15   | 5          | 6     | 2     | 1         | 60         | 42'0       |
| 26 ...       | 7      | 13   | 2          | 7     | -     | 1         | 60         | 41'9       |
| 27 ...       | 4      | 18   | 2          | 4     | -     | 1         | 44         | 41'6       |
| 28 ...       | 9      | 16   | 2          | 2     | -     | 1         | 49         | 41'3       |
| 4th week ... | 52     | 121  | 31         | 27    | 6     | 7         | 354        | —          |
| 29 ...       | 8      | 14   | 3          | 3     | 3     | 2         | 46         | 41'0       |
| 30 ...       | 7      | 12   | 2          | 4     | -     | -         | 52         | 40'7       |
| Month ...    | 194    | 524  | 130        | 74    | 23    | 20        | 1,395      | 43'5       |

## "HEROES OF THE AIR."

WE have already seen the excellent results of the collaboration of Mr. Claude Grahame-White and Mr. Harry Harper, and the new volume which they have written promises to be as successful as their initial effort. This time they are appealing to a different audience, and their subject is not quite the same. Boys love heroes, and are never tired of reading of their wonderful doings, and they will, no doubt, take as keen a delight as ever in reading this thrilling and interesting story of the struggles of the pioneers in the art of flight. Perhaps not unnaturally the book opens with an account of the experiments and tests carried out by Otto Lilienthal, "the father of the aeroplane," and it passes on to the work of Pilcher, Hargrave, Chakute, and Montgomery to Sir Hiram Maxim. The Wright Brothers next come in for consideration, and then follow chapters on

Santos Dumont, Henry Farman, Louis Blériot, Hubert Latham, Louis Paulhan, and Grahame-White. All these have had stirring experiences such as the normal boy delights to hear about, and he will find the story loses nothing of its "life" in the telling. The concluding chapters deal with some of the martyrs and heroes whose names stand out in the history of the wonderful development of the last three years, such as Rolls, Grace, Captain Ferber, Delagrangé, Chavez, Sopwith, Drexel, Vedrines, Moranc, Renaux, &c. Those who are casting about at this season of the year to gratify the anticipations of sundry cousins and nephews will find the book makes a very acceptable gift for boys. It is well illustrated by a number of coloured pictures, as well as a very good series of photographs, and is published by Messrs. Hodder and Stoughton at 6s. net.



# A Study of Bird Flight

By Dr. E. H. Hankin, M.A. D.Sc.  
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## CHAPTER XXXI.—Steering Movements in Flapping Flight. Flying Foxes.

ONE might expect, *a priori*, that steering movements in flapping flight would be discovered by a study of the larger birds. But, as I have elsewhere stated, vultures and adjutants never indulge in prolonged flapping flight. Periods of flapping are alternated with periods of gliding. While gliding, steering movements (by wing-tip rotation or wing depressions) can be seen. It appears to me probable that they choose the period of gliding for steering, as a rule, and only in exceptional instances make any steering effort while flapping.

From my description of the position of the wing-tips in flapping flight, it follows that it is unlikely that the wing-tips play any important part in producing steering effects or canting in flapping flight. We may expect that both these functions are carried out by adjustments affecting the whole wing.

In the case of flying foxes (*Pteropus medius*), I have succeeded in discovering steering movements in flapping flight. It will therefore be of interest to describe the flight of these creatures.

I obtained the following measurements from three different specimens of the flying fox:—

|                  | I.                   | II.                  | III.                 |
|------------------|----------------------|----------------------|----------------------|
| Weight ...       | 923 grammes          | 860 grammes          | 640 grammes          |
| Span ...         | 51½ ins.             | 48½ ins.             | 44 ins.              |
| Area of one wing | 1·21 sq. ft.         | ·962 sq. ft.         | ·914 sq. ft.         |
| Width of wing    | 8½ ins.              | 8 ins.               | 8 ins.               |
| Loading ...      | ·84 lbs. per sq. ft. | ·98 lbs. per sq. ft. | ·77 lbs. per sq. ft. |

The membrane of the wings of these animals is so soft and extensible that it is difficult to be certain how far the wing measurements given above correspond to the size of the wings in actual flight.

A colony of between one and two hundred flying foxes lives, during most of the year, in a garden in Agra known as the Company Garden. During the day-time these animals may be seen hanging head downwards from the branches of a large tree. During September, October and November these bats used to commence their flight in twilight. After flapping and gliding round the tree for a few minutes they used to fly off, flapping, in solitary flight to their feeding grounds. During December and January the whole colony disappeared. In February a few returned, but from then up to the time of writing (April) they do not start until it is almost completely dark, so further details of their mode of flight are no longer to be observed.

The structure of the wing of the bat, as compared to the wing of a bird, is extremely complicated so far as the numbers of muscles present are concerned. Despite the large size of the flying foxes that I dissected I found that the majority of the tendons were scarcely thicker than a bristle.

Most of the muscles have flexing and extending functions. The flying fox has no power of rotating the wing-tip. There is a muscle that can rotate downwards, or turn downwards the middle third of the anterior margin of the wing. This is the part of the anterior margin that is supported by the first two digits and that extends in front of the main bony framework. By turning downwards of this part of the margin the camber can be increased.

There is also a muscle whose action is to bend downwards the outer part of the wing. The bending occurs at the carpal joint, thus producing the appearance of arching that is seen in the flapping flight of this animal.

That there is a general similarity between the flight of flying foxes and the flight of birds is shown by the following extracts from my diary:—

September 24th, 1910. 6.30 p.m.—At Company Garden.—Flying foxes seen clearly to move wings quicker during the up stroke than during the down stroke. This, combined with the arching at the end of the down stroke, causes the illusory appearance of a pause during the beat.

On several occasions a flying fox seen to cease flapping for making a turn (in the horizontal plane). In each case it recommenced flapping immediately it had turned.

A flying fox seen gliding with wings arched. It was seen to check its speed by advancing the wings which were still arched.

Advance of wings on down stroke seen in slow flapping flight.

Flying foxes frequently seen gliding downwards, at a small angle with the horizon, with wings arched, and at moderate

speed. On one occasion a flying fox seen to glide downwards but with wings even and dihedrally down. It was gliding down at a small angle with the horizon, and its speed was seen to greatly increase.

September 26th, 1910.—At Company Garden. 6.30.—A flying fox half flapping showed advancing of wings with consequent rotation round transverse axis. This was for checking speed.

A flying fox gliding with wings arched showed increase of arching of one wing for steering.

A flying fox gliding downwards (at a small angle with the horizon) with wings nearly flat showed a whole wing depression for steering.

I have on other occasions seen increase of arching for steering in flapping flight. The wing appears to be more arched at the end of the down stroke on the side to which the bat wishes to go. But it is a question how far this appearance of increased arching is illusory. It is possible that the arching is not increased in amount, but that it lasts longer. But in the case of a flying fox gliding downwards with wings arched, I have noticed that increase of arching was followed by increased rate of loss of height.

As in birds the dihedrally up position is used for causing rotation upwards, as illustrated by the following observations:—

October 2nd, 1910.—At Company Garden. 6.30.—A flying fox when gliding was seen to put wings in slightly dihedrally up position for rotation round transverse axis to check speed before stop flapping.

Flexing with arching seen for checking speed in gliding. In flapping flight increased arching of one wing seen for steering. This was again seen.

On three occasions I formed the impression that the wing is slightly flexed on the down stroke in flapping flight.

Despite a somewhat intimate acquaintance with the flight of vultures, I have only on one or two occasions seen one of these birds make a sudden movement to avoid another. No doubt, owing to their habit of flying together, they are expert in judging the movements of other birds. Flying foxes show no such gregarious habits when flying. They are only together in the air for a few minutes after leaving the tree on which they roost. Hence, despite my comparatively slight acquaintance with these animals, I have very frequently seen them make sudden movements to avoid one another. On one occasion I have seen them apparently in collision in the air. These sudden movements can be seen to result in the beat of the wings being horizontally to and fro. In a few cases only I have seen that this is preceded by rotation round the transverse axis caused by advancing the wings.

I will close my account of flying foxes with the following extract from my diary:—

November 15th, 1910.—At Company Garden.—A flying fox seen gliding with wings arched. Increase of arching was followed by increased rate of descent.

A flying fox gliding with wings that showed a wing depression. This was a very slight movement. (Apparently it was a steering movement.)

Two flying foxes noticed in collision. As a result there appeared to be rotation both of wings and body to check speed.

Flapping seen without arching. Apparently it was half flapping to check speed.

A flying fox seen to advance wings, and rotate round transverse axis. Then it rotated round its dorso-ventral axis. It gave me the impression that the object of this manoeuvre was to turn suddenly horizontally. (Each of these two rotations was through about 90°. A more detailed account of a similar proceeding in the case of a cheel will be given in Chapter XXXIV.)

In arching, the posterior margin of the wing seems to go up.

## CHAPTER XXXII.—The Functions of the Tail.

With regard to the question of the functions of the tail, Lillenthal expresses himself as follows:—

"As compared with the action of the wings, the tail surface of birds has only a very small importance, since the bird flies very nearly as well as before after loss of the whole of the tail feathers. This is the case not only as regards turning upwards and downwards but also as regards steering in the horizontal plane. A sparrow deprived of its tail flies just as adroitly through a lattice as its intact brother."\*

\* "Der Vogelflug als Grundlage der Fliegekunst," page 72.

In order to discover the functions of the tail of birds, it is necessary to discover exactly in what respects the flight of the tailless bird is defective.

During the cold weather of 1909-10, several cheels were known to me by sight whose tails were more or less mutilated. The tail feathers of one, or, perhaps, two cheels were entirely missing. Another had tail feathers about half an inch long. Another had only a single tail feather which, however, was stripped entirely of its barbs, and which resembled a bristle of about three inches in length. Another had a single tail feather on one side. Another had a single tail feather on each side. Another lacked the whole of the tail feathers of one side of the tail. I propose to refer to these mutilated birds collectively as "tailless cheels." I was so fortunate as to discover the conditions under which their stability is defective.

Elsewhere I have described as "tail jolting" somewhat rapid up and down movements of the furred tail of the cheel, which appear to have to do with maintenance of equilibrium round the transverse axis. I have on rare occasions seen similar movements in the case of the lammergeyer, the black vulture, and the common vulture, usually when gliding in disturbed and stormy winds. Tail jolting movements are shown by tailless cheels, in the sense that the posterior portion of the body may be seen to be jolted up and down. Tailless cheels, under all conditions, at first sight appear to have as much stability round the transverse axis as tailed cheels. Occasionally, however, in irregular winds, they make double-dip movements more energetically than tailed cheels.

The fact that tail jolting as above described occurs in tailless cheels accords with my suggestion that this adjustment acts by altering the position of the centre of gravity and has nothing to do with the pressure of the air on the surface of the tail feathers.

We have now to consider the functions of the expanded tail, when, as we shall see, there is reason for believing that air pressure on the surface of the tail comes into play.

The long axis of the tail is a continuation of the long axis of the body. When the tail is furred, the tail feathers lie close together and parallel to this long axis. When the tail is expanded the tail feathers come apart like the ribs of a lady's fan. The expanded tail can be rotated to and fro round its long axis. It is necessary to discover the meaning of this movement.

So far as I am aware all birds usually expand the tail when settling in a calm or a light wind. In Fig. 20 I have already shown the aspect of the tail of a green parrot when stop flapping. The tail feathers are seen to be widely expanded. When the bird is settling, besides being expanded, the tail is depressed so that its surface lies nearly at right angles to the direction of movement of the bird. For instance:—

June 17th, 1910.—At Ballia Ravine. 2.46.—A crow seen descending. Its tail was furred and raised. Immediately before perching it expanded and depressed its tail.

A tailless parrot is known to me by sight. When in flapping flight in company with other parrots it shows no lack of stability or of power of guiding its movements. On one occasion I happened to see it perching. As it caught hold of the bough with its feet it seemed nearly to tumble over backwards; that is to say, there was too much rotation round the transverse axis.

These facts suggest that, in perching, the expanded tail acts as a brake, principally for checking movement round the transverse axis. Rotation round this axis is produced by advancing the wings, and checked by expansion of the tail. The depressing of the expanded tail may also help to check the forward movement of the bird through the air.

Expansion of the tail, in the case of pigeons and swifts, is used to assist in checking speed in gliding flight. For this purpose the wings may be seen to be placed dihedrally upwards. In some cases the dihedral angle may be nearly as much as 45°. This adjustment tends to produce rotation upwards round the transverse axis. The expansion of the tail tends to check this rotation. The two actions, together with the decrease in supporting area of the wings, result in a decrease of speed.

We have now to consider the function of the tail in relation to stability round the dorso-ventral axis.

In a light wind, and away from the influence of currents directed upwards from high buildings, tailless cheels show no lack of stability round the dorso-ventral axis.

In a light wind, but in the presence of upwardly-directed currents, tailless cheels show very slight instability round the dorso-ventral axis. For instance:—

May 29th, 1910.—On Strand Road outside and below Fort battlements. From 6.30 p.m. onwards.—Wind east, for the most part light, just moving leaves. Many cheels and one or two scavengers over the battlements. Tailless and short-tailed cheels all appeared nearly stable round dorso-ventral axis. Cheels kept their tails furred except sometimes when gliding low just over battlements and when gliding to leeward. When just above battlements the tailless cheels seemed unsteady round

dorso-ventral axis. During a light puff of wind many cheels remained wind-facing almost fixed in position. Others, and also the tailless cheels glided to and fro above the battlements at right angles to wind direction. At the end of their course the tailless cheels turned just as easily as the others, using wing depressions.

Both cheels and scavengers were noticed to increase flexing of wings to increase speed, e.g., one cheel chasing another, a cheel chasing a hawk, or in response to a puff of wind.

As the wind was easy, tailless cheels were able to glide up to the front of the group of birds. This was noticed three times at least. When directly overhead slight instability round the dorso-ventral axis was noticed. During a puff of wind, when wings were much flexed, a tailless cheel appeared to have alulae extended. (I believe this adjustment might, under similar conditions, be shown by a complete cheel.)

Tailless cheels appeared to make double dips, when wind-facing more often than complete cheels. Except for slight tail-jolting, tailless cheels were quite stable when going to leeward on a curved course.

All the cheels went away between 7.10 and 7.16, when it was getting dark.

On the other hand in a stronger wind over the fort battlements tailless cheels show instability round the dorso-ventral axis. This is especially the case when the wind is west. Owing to the arrangement of buildings on the west side of the fort, a westerly wind causes complicated and varying upward currents. For instance:—

May 7th, 1910.—At Delhi Gate of Fort. At 5.45.—Wind west and rather strong. Many cheels and scavengers wind-facing. A tailless cheel showed unsteadiness round dorso-ventral axis. A depression of the wing for turning seemed to produce more steering (in the horizontal plane) than was intended. Hence the bird had to go off on a glide to leeward. It was unable to advance as far in front of the battlements as complete cheels when wind-facing. A cheel with only one tail feather was similarly unsteady. I have seen the same phenomena on other occasions. If there is

a wind, cheels collect on the windward side of the walls of the fort as the air becomes unsoarable at sunset. If the wind is strong, the birds form a column reaching upward for 100 metres or perhaps more above the battlements. If the wind is light, the cheels remain at a lower level, gliding just over the top of the battlements. When the wind is west and strong, complicated air currents occur, and cheels appear to find gliding under these conditions to be a difficult task. Steering movements of the wings, jolting and rotation of the tail, all occur with bewildering frequency. Especially in a stronger wind tailless cheels may be seen generally on the leeward side of the cluster of birds. Any wing depression for steering seems apt to turn them too far. They may try to correct this excessive turn by a depression of the other wing. Sometimes they succeed, but more often they turn too far in the opposite direction, and appear obliged, as if against their will, to glide off to leeward. Normal cheels, on the other hand, supported on the ascending currents, often glide to some distance to windward of the battlements. Here they may remain for several minutes at a time "wind-facing." That is to say, they remain, generally facing the wind more or less, gliding to and fro, and so adjusting their speed that they travel but slowly over the earth, and remain at almost a constant distance to windward of the battlements. Sooner or later they are turned, as if by some irregularity of the wind, and glide rapidly to leeward. Then, turning, they glide up again to windward, and reach their original position. Tailless cheels are evidently handicapped in attempting this feat. Usually they have scarcely crossed the line of the battlements when they may be seen to be in difficulties, and after a few energetic attempts to remain facing the wind, they may be seen to turn away, and glide off to leeward.

When at some height above the battlements cheels usually keep their tails furred. When nearer the battlements the tails are more or less expanded. As a rule the tail is fully expanded when the bird is making a turn, or when it is gliding away to leeward. The tail when expanded is frequently rotated to and fro round its longitudinal axis. That is to say, first one side and then the other side of the tail is depressed below the horizontal plane. The range of movement of the tail in this rotation may be as much as 30°. There is no clear and evident connection between rotation of the tail and change of course. Sometimes a cheel may be seen with its tail strongly depressed to one side for an appreciable time, but yet the bird continues to glide in a straight line. That is to say, a depression of one side of the tail *per se* has no steering action. Sometimes after the tail is depressed on one side there is a wing depression of the same side, to which side the cheel is accordingly steered. If this sometimes occurred, and if the alternative was that during a steering movement the tail should be horizontal, one might come to the conclusion that a depression of one side of the tail (that is to say, a rotation round its long axis) was an additional movement that aids steering but that is not indispensable. But it sometimes happens that, during a turn, the tail is



observed to have been rotated in the opposite direction. For instance, a wing depression of the left wing may occur and steer the bird to the left at a time when the right side of the tail is depressed.

As soon as my acquaintance with the facts led me to doubt whether rotations of the tail produce steering movements, I made a point of looking to see whether, in normal turns, the depressing of the side of the tail was coincident with or preceded the wing depression. To my surprise I found that the rotation of the tail, if it occurred at all, preceded the wing depression. In view of the facts described relating to tailless cheels, there can be little doubt that the function of the tail is to act as a break for turns round the dorso-ventral axis, and that it does so more efficiently if the side of the tail is depressed on the side of the turn. Supposing the bird is about to steer to the right, this steering tends to be checked by the tail if this organ has so rotated round its longitudinal axis that the right half of the tail is depressed below the horizontal plane.

Obviously if movements of the tail produced steering, then tailless cheels should turn less readily than complete cheels. But, as we have seen, the contrary is the case. Hence the dorso-ventral axis instability of tailless cheels gives strong support to the view that the function of the tail is to act as a break in the manner described.

The numerous apparently purposeless rotations of the tail when cheels are manoeuvring in complicated air currents must on this view be regarded as "anticipatory movements." They are preparations for turns that it may or may not make as it is influenced by changing air currents or the necessity of avoiding other birds.

Flying foxes when poising before perching may frequently be seen to advance the hind legs. No doubt this movement is preparatory to grasping the bough with their feet. But as it results in bringing the posterior part of the wing surface to a position at right angles to the direction in which the animal has been gliding, it is possible that to some small extent the action has a braking effect similar to that produced by the depressed and expanded tail of birds when perching.

It remains to consider the possibility that the tail has an action

similar to the horizontal rudder of aeroplanes in steering the bird up and down. I have already stated that the tailless cheel, in an irregular wind, may show double dips more often than complete cheels. This statement is illustrated by the following observation:—

December 13th, 1910. At 11.20.—Wind rather strong and moving branches. A tailless cheel seen overhead about 10 metres above the tree-tops. It showed slight instability round the dorso-ventral axis. This consisted in occasional sudden turns (round this axis) through about 10°. Each time it turned back to its original position with equal suddenness and after an appreciable pause. There was no attempt to check rotation round the dorso-ventral axis by double dips. It made double dips more often than did complete cheels that were gliding near. Its double dips seemed larger and more sudden than usual.

Though double dips were not used to check rotation round the dorso-ventral axis, it is possible, on the one hand, that such rotations caused loss of speed ahead, and hence there was the necessity for an occasional double dip to increase speed. On the other hand, it is possible that the surface of the expanded tail of the complete cheel acts, so to speak, passively in checking rotation round the transverse axis. Possibly, lacking this break, the tailless cheel is apt to be rotated upwards round the transverse axis, and hence occasionally finds it necessary to make a downward rotation round this axis by means of a double dip. But, on the other hand, there is no doubt that the tail does not actively produce rotation round the transverse axis after the manner of the horizontal rudder of an aeroplane. If it did so, the tail should be depressed when the bird is gliding downwards. But, as we have seen, when the bird is gliding downwards the tail is furled and raised. It then acts by raising the position of the centre of gravity relatively to the centre of resistance of the wing-tips, thus tending to cause rotation downwards round the transverse axis. Conversely, when the bird is perching, it rotates upwards round its transverse axis. If the tail acted as the horizontal rudder of an aeroplane, it should then be elevated; but, as we have seen, the expanded tail of the perching bird is depressed.

(To be continued.)

## THE MILITARY AEROPLANE.

IN the October issue of the *Army Review*, Major Sir A. Bannerman, Bart., R.E., commanding the Air Battalion, has an interesting article, in which he sets forth a few of the things which should be borne in mind by the designer of an aeroplane for military work. He summarises the broad outlines of the requirements to be met by air-craft for use in the British Army as follows:—"Airships must be small and speedy. Aeroplanes must be readily dismountable, not too large, have speed enough to allow of flying in moderate winds, be able to land on rough ground, and start from it, and need but little run for starting. The settlement of details, such as loads to be carried, speed of ascent, duration of flight, &c., falls within the province of practical military flyers, who hold very various opinions."

With regard to the use of aeroplanes, the author points out that, although damage to important points may occasionally be done by dropping explosives from aeroplanes, it is impossible to take the prospect seriously; air-craft may be so useful in other ways that a commander can really be justified in risking their loss by using them for offensive purposes. There remain the two functions of despatch carrying and reconnaissance, and, as for the latter a passenger must be carried, it should be possible to design one type to suit both cases. A wireless telegraphy installation will probably form part of the equipment in the future.

Standardization of parts is essential to war material, therefore there should be as few varieties of aeroplanes as possible. With regard to arrangements for aeroplanes in actual service, Major Bannerman suggests that it appears advisable to group aeroplanes in pairs so that at least one should always be available. Two pairs could be combined to form a section, and two or more sections made into a company, but it is important that each section should contain machines of only one type, as by that means the expert supervision is simplified and personnel reduced. One of the most difficult problems is the repair and maintenance of aeroplanes in the field. Some form of mobile workshop must be maintained close to the front, otherwise it may be necessary to abandon machines that have only slight defects.

With regard to the airship, it has been proved that large vessels are unsuitable for use in this country owing to the numerous trees, woods, towns and villages, combined with a strength and gustiness of winds. The exact size most suitable for the British Army can only be found by experiments, but it seems that the gas capacity should be between 80,000 and 100,000 cub. ft. One of the chief difficulties in dealing with airships is the establishment required to maintain them. Sixty men are needed to handle a vessel of

moderate size, while the gas to keep it properly inflated means much heavy transport.

In concluding the article Major Bannerman points out that the kite is by no means superseded in military operations. He also draws attention to the fact that officers for aerial work are much rarer than is supposed, and as the work is peculiarly trying, few individuals long retain a taste for it. The remedy must be to induce larger numbers to take up the duties and consequently to replace the elder hands by fresh recruits. Far more candidates are available than are required; it remains only to give them a chance for showing what they can do.

We are reminded that Great Britain's frontier is the enemy's coast, and the moment he puts to sea we are invaded. That being so, it follows that large aerial stations in the interior of England, or even near the coast, cannot be so effective as those in the frontier fortresses of Continental Powers. They may be suitable for passive defence, but their distance from the enemy will make it very uneconomical, if not impossible, to use them as points of departure for air-craft intended to operate overseas. It is therefore obvious that, although we have much to learn about aerial work from our neighbours, it will not be safe for us blindly to follow their lead.

The main lines of a British defensive policy must be decided by the needs of the Navy, and, unfortunately, little is as yet known about the use of air-craft in connection with Naval forces. Developments are likely to take place during the next two or three years, and by the end of that period we should know definitely what are the offensive and defensive powers of dirigible balloons and aeroplanes, respectively; then it will be possible to come to some decision as to the class of air-craft to be employed, and the size and position of the stations to be formed.

### Death of J. I. Montgomery.

WE regret having to record the death of Prof. John J. Montgomery, of California, which took place while he was experimenting with his gliders at Santa Clara. One of the earliest practical workers, and also one of the closest students of the science, Mr. Montgomery was, perhaps, best known to the public through the experiments made with his Langley type gliders by Maloney, who launched himself into the air on these machines after ascending with them attached to a balloon.



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## Committee Meeting.

A MEETING of the Committee was held on Tuesday, the 7th inst., when there were present:—Mr. R. W. Wallace, K.C., in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Col. H. C. L. Holden, C.B., R.A., F.R.S., Prof. A. K. Huntington, Mr. F. K. McClean, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, Sir Charles D. Rose, Bart., M.P., Mr. A. Mortimer Singer, and Harold E. Perrin, Secretary.

**New Members.**—The following new members were elected:—Wilhelm Clouth, Jean de Francia, Tom Garne, Bentfield Charles Hucks, and Stanley Skipworth.

**Aviators' Certificates.**—The following aviators' certificates were granted:—

- 152. Lieut. H. H. Harford (Bristol biplane, Brooklands).
- 153. Mrs. C. de Beauvoir Stocks (Farman biplane, Hendon).
- 154. Captain E. B. Loraine (Valkyrie monoplane, Hendon).

**Royal Aero Club Special Certificate.**—The Committee re-considered the time-limit for the cross-country flight, and decided to increase this to five hours.

The full rules are as follows:—

### ROYAL AERO CLUB SPECIAL CERTIFICATE.

(Under the rules of the *Fédération Aéronautique Internationale*.)

The Royal Aero Club of the United Kingdom will grant a Special Certificate to aviators who have passed the following tests:—

- I. A. Candidates must hold the F.A.I. Aviators' Certificate, and be entered on the Competitors' Register of the Royal Aero Club.
- B. The requirements are:—

- (1) A cross-country flight, out and back round a point situated at least 50 miles from the start. The turning point will be selected by the Royal Aero Club, and will not be indicated to the candidate until one hour before the starting time selected by the candidate. This flight shall be completed within five hours of the selected starting time.
- (2) A separate altitude flight of at least 1,000 feet rise, which shall be verified by recording barograph, sealed by the observers prior to the start.
- (3) To glide from a height of at least 500 feet above the ground to earth, with engine completely cut off, and alight under normal conditions within 100 yards from the starting point. This glide may, at the candidate's option, be the conclusion of Test 2.

A sealed barograph must be carried in all flights.

- 2. Each of the flights must be vouched for in writing by observers appointed by the Royal Aero Club. All tests to be under the control of, and in places agreed to by, the Royal Aero Club.
- 3. All flights must be made between sunrise and one hour after sunset, and suitable previous notice must be given to the Secretary of the Royal Aero Club.
- 4. Candidates must make application on a form provided for that purpose. Any expenses incurred must be borne by the candidates.
- 5. The Royal Aero Club will decide if the candidate has qualified for a certificate, but reserves the right to refuse the same or withdraw the same at any time without giving reasons.
- 6. The decision of the Royal Aero Club on all matters connected with the tests is final and without appeal.
- 7. The Royal Aero Club reserves itself the right to add to, amend or omit any of these rules, should it think fit.
- 8. The Royal Aero Club declines all responsibility for any accidents, or any damage that may occur to the aviators, their machines or to any third parties during or in connection with the qualifying tests of the candidate.

### British Empire Michelin Cup No. 1.

The competition for this year's prize of £500 closed on October 31st, 1911. Mr. S. F. Cody was the only competitor who succeeded in

accomplishing the minimum distance of 250 miles, as laid down in the rules, and the Committee, after examining the observers' reports and certificates relating to the aeroplane, unanimously awarded the prize of £500 and trophy, kindly offered by the Michelin Tyre Co., to Mr. S. F. Cody. The flight was made at Laffan's Plain round a circuit of about 7½ miles. Mr. Cody started at 8.3 a.m., and finished at 1.18 p.m., the distance being 261 miles 810 yds.

The following are the specifications relating to the all-British aeroplane used by Mr. S. F. Cody:—

Cody biplane — Motor, 60-h.p. Green; carburettor, Zenith; magneto, British Bosch; sparking-plugs, Pyramid; fabric, Pegamoid; propeller, British Chauvière.

The Royal Aero Club wishes to record its thanks to the following gentlemen, who kindly acted as official observers in connection with the competition:—

|                           |     |                  |
|---------------------------|-----|------------------|
| Lieut. A. G. Fox, R.E.... | ... | Laffan's Plain.  |
| Mr. G. B. Cockburn ...    | ... | Salisbury Plain. |
| Capt. Efford Bignell ...  | ... | Freshfield.      |
| Mr. G. Higginbotham ...   | ... | Freshfield.      |
| Mr. J. W. F. Tranmer ...  | ... | Filey.           |

### British Empire Michelin Cup No. 1.

|  |                                |
|--|--------------------------------|
| 1909. Winner, J. T. C. Moore-Brabazon. | Distance, 19 miles.            |
| 1910. " S. F. Cody.                    | Distance, 185 miles 787 yards. |
| 1911. " S. F. Cody.                    | " 261 miles 810 yards.         |

### British Empire Michelin Cup No. 2.

|                           |   |
|---------------------------|---|
| 1911. Winner, S. F. Cody. | 125 mile circuit. Time, 3 hrs. 6½ mins. |
|---------------------------|---|

### Late Hon. C. S. Rolls and Cecil S. Grace.

The following contributions have been received towards the stained-glass window now being erected in the church at Eastchurch:—Colonel Sir George Holford, £2; William Harbrow, £2 2s.

### "Daily Mail" Circuit.

Mr. S. F. Cody has been presented with a cheque for £40, being the prize offered in connection with the *Daily Mail* Circuit, for the first all-British aeroplane to arrive at the Newcastle Control. The donors of the prize are:—The Hon. Sir Chas. A. Parsons, K.C.B., Major J. F. Laycock, D.S.O., the Northumberland and Durham Aero Club, and the North-Eastern Syndicate, Ltd.

### Membership of the Royal Aero Club.

The membership of the Royal Aero Club is being added to each week, and a large number of new members have been elected during the year. The Committee, however, hopes that all members will use their best influence in extending the membership. The subscription of those members elected between now and the end of the year will cover the period ending December 31st, 1912.

### Annual Dinner.

The annual dinner of the Royal Aero Club will take place on Thursday, December 14th, 1911, and members will be receiving within the next few days a circular giving all particulars.

At this dinner the prizes recently awarded will be presented to the successful competitors.

### Lecture by Capt. C. J. Burke (Air Battalion).

On Wednesday, November 15th, 1911, at the Royal United Service Institution, Whitehall, S.W., Capt. C. J. Burke, of the Army Air Battalion, will deliver a lecture on the subject "The Airship as an Aid to the Solution of Existing Strategical Problems." The Royal United Service Institution has kindly placed a limited number of tickets at the disposal of members of the Royal Aero Club, and members wishing to attend the lecture are requested to make application to the Royal Aero Club.

HAROLD E. PERRIN,  
Secretary.

166, Piccadilly.

### Milan-Turin-Milan Race.

THE three competitors in this event who succeeded in getting to Turin, started back on the 31st ult. Verona was the first away, followed at three-minute intervals by Manissero and Maffei. The first two succeeded in getting back to Milan without any trouble, the journey taking about an hour and a half. Manissero was placed first, his flying time for the two trips being returned as

3h. 16m. 2½s., while Verona was second in 3h. 17m. 56s. Both pilots used Blériot monoplanes, with Gnome engines.

### A Fatal Accident in Austria.

WHILE giving an exhibition flight at Pilsen the aeroplane piloted by the Austrian aviator, Schinrunek, for some unexplained reason suddenly dived from a height of 200 metres, the pilot being killed instantly by the fall.

## PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of *FLIGHT*, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

### Women's Aerial League (227, STRAND, W.C.).

ARRANGEMENTS have been made for a course of lectures to be given at the Polytechnic, Regent Street, London, under the auspices of the Women's Aerial League, by Mr. L. Blin Desbleds. The syllabus is as follows:—

Nov. 17th.—“General survey of the aeronautical situation in Europe, with special reference to England's dangerous position.”

Nov. 24th.—“Some lessons that have been learnt from the great French military aviation competition of Autumn, 1911.”

Dec. 1st.—“Description and use of the different parts of an aeroplane, with practical demonstrations by means of models.”

Dec. 8th.—“Airships.”

Dec. 15th.—“Aeroplane motors and propellers.”

Dec. 22nd.—“Description of some of the great European flights, with moving pictures.”

Fee for the course, 5s.; members of the League, 2s. 6d.

### MODEL CLUBS.

#### Aberdeen Aero Club (387, HOLBURN STREET, ABERDEEN).

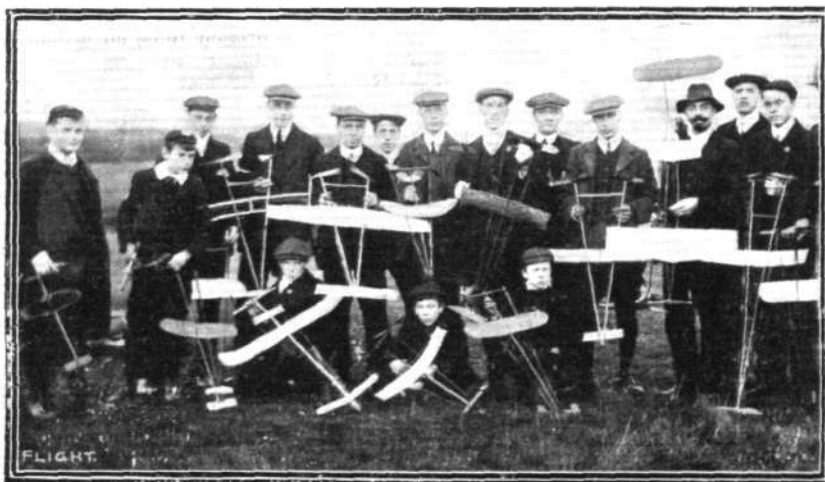
OWING to the gale, last week's competition was postponed until to-day, Saturday, after several of the models had been smashed. In spite of the stormy conditions, one flight of 600 ft. and another of 500 ft. were obtained. The meeting to-day will start at 3 p.m., on the Kincorth Flying Ground, and there will be a business meeting at 7 p.m. in the Trades Hall.

#### Birmingham Aero Club (8, FREDERICK ROAD, EDGBASTON).

THE Committee of the club have now decided to hold weekly competitions at Billesley Farm. Two medals or badges are to be made, and will be competed for weekly. These medals or badges will be for distance and duration respectively, and on any competitor winning it six times in succession the medal or badge will become his property.

The first competition for distance was held on Saturday last, when the elements were, however, not at all favourable for model flying. The result of this competition was as follows:—1st, Mr. E. Trykle (handicap, 150 ft.), 675 ft.; 2nd, Master Stamps, 576 ft.; 3rd, Mr. Thompson, 453 ft.

After the competition, the glider, which was found in the field next to that in which it was left, having been blown over the hedge during the week, was repaired, and some good towed flights were obtained, one of which was with a passenger on board. On Sunday last also some excellent flights were obtained in the gale which was blowing. By the time half-a-dozen flights had been successfully made, some of which lasted for 2 mins. while the towers remained stationary, the glider was pretty well demolished, and it was decided to abandon it. The Club will not, however, be long without a glider, as two members have machines in the course of construction, and another is being started in the shed on the ground this week.



CONISBOROUGH MODEL AERO CLUB.—A gathering at the weekly competition on Saturday last. Left to right (standing): H. Brocklesby, J. N. Foster, R. Jarvis, W. H. Gould, W. R. Blake, —, F. J. Wright, F. S. Wallis, J. I. Webster, C. B. Blake, E. E. Noble, G. Dewsnap, R. J. Frougton, (sitting) B. Clarkson, F. J. Robinson, A. Drabble.

#### Blackheath Aero Club (5, LIMESFORD ROAD, NUNHEAD, S.E.).

WIND and rain prevented any good flying last week-end, but, in spite of the very difficult weather conditions, Messrs. Dollittle, Brough, Waghorn, Trask, and Clark struggled gamely to get a little practice in view of the forthcoming competitions to be held on Saturday, December 2nd. Full details will be available next week.

The Committee would like to remind several members to get in a little model work, as this is an essential condition for membership of the B.Ae.C. Will present and prospective members please note that their subscriptions will be due on December 1st next, and should be forwarded to the treasurer at the above address on or before that date?

There will be the usual experiments and practice flights at the Kidbrooke and Lee Aerodromes during this week-end, and to-day, Saturday, Mr. Clark, assisted by Mr. A. E. Woollard, will give demonstration flights with various types of models—including “rising from the ground”—at Shrofield's Farm, Whitefoot Lane, New Grove Park Station (S.E. and C.R.).

The Committee will grant “Certificates of Merit” for models to members who have passed the following tests:—1st Class Certificate.—A flight of not less than 400 yards, and a separate altitude test of 60 ft. 2nd Class Certificate.—A flight of not less than 200 yards—no altitude test in this class.

The tests should be observed and checked by two members of the club, and the results communicated to the hon. secretary.

#### Conisborough and District Aeroplane Soc. (18, CHURCH ST.).

THE largest model-flying meeting ever held in the North of England was successfully organised by the Society on Saturday last. A large number of competitors had entered, the following clubs being represented: Birmingham, Sheffield, Doncaster, and Conisborough. The Conisborough Club held its own against all comers, the first and second prizes going to two of its members, while the third went to Sheffield. Some very good flying was witnessed, in spite of the tricky cross wind experienced. The longest flight was made by F. J. Wright, of Doncaster, a member of the Conisborough and District Ae. S., whose flight of 630 ft. in 28 secs. was a creditable performance, when the inclement weather conditions were considered. C. C. Allport, of Conisborough and District Ae. S., was second, with 470 ft. Four competitions were held, viz., distance, duration, speed, and direction, the first three in each competition taking respectively 30, 20, and 10 marks each. The winners of the three prizes were the competitors with the respectively three best aggregates.

The awards were as follows:—Distance—1. F. J. Wright, 630 ft.; 2. C. C. Allport, 470 ft.; 3. E. E. Noble, 300 ft. Duration—1. F. J. Wright, 28 secs.; 2. G. Dewsnap, 10 secs.; 3. W. H. Gould and T. S. Wallis, 9 secs. Speed—1. C. C. Allport and G. Dewsnap; 3. F. J. Wright. Direction—1. W. H. Gould; 2. F. J. Wright; 3. C. C. Allport.

The prize-winners were—1. F. J. Wright, Doncaster, member of Conisborough and District Ae. S.; C. C. Allport, Conisborough; 3. G. Dewsnap, Sheffield.

#### Croydon and District Aero Club.

A CLUB under the above name is being formed in this district, and an impromptu meeting was held on Wednesday, 1st inst., on Mitcham Common. Several good flights were obtained, the quarter-mile being a common occurrence. Mr. C. Smither, with a Mann monoplane, obtained a flight of 1,500 ft., at a height of from 60 to 70 ft. The longest flight was obtained by Mr. H. Smither, his model flying 2,200 ft. Mr. Grenfell arrived with a large model of 7 ft. span, but was unable to obtain a good flight owing to elevator trouble. Mr. Uwens' machine proved to be exceptionally fast. Any readers desirous of joining the club should communicate with E. G. Wilkinson, sec. pro tem., at 129, High Street, Croydon.

#### Johannesburg Model Aeroplane Club.

A club is now forming, under the control of the Aeronautical Society of South Africa, with the above title. All interested can receive full particulars on writing to Comper Gray, Sec., Box 880, Johannesburg, S.A.



## Liverpool Model Aero Club (39, BROOK ROAD, BOOTLE).

THE membership is increasing gradually, and at the meeting on Saturday four new members were enrolled. Some very good exhibitions were given by Mr. Ledward, his twin-screw model flying as though there was no such thing as wind. Mr. S. Malin's twin-screw monoplane also did very well. Some lengthy flights were also obtained with Mr. J. Malin's and Mr. J. Gavin's single-screw machines, but Mr. Pugh had hard luck with his "Cathedral," as it smashed up after two trials. There will be the usual flying to-day (Saturday), and it is proposed to hold the first discussion on Tuesday next. Mr. J. Hardman, of Blundell Sands, has been elected President.

## Manchester Model AeC. (40, BIGNOR STREET, CHEETHAM).

ON Saturday last the members of the Manchester Model Aero Club held their weekly flying meeting as usual. The weather was extremely adverse, there being a hurricane blowing across the aerodrome, with numerous showers of rain. Although there were many hands practically blue with cold, the enthusiasm was in no wise checked, for numerous excellent flights were made, the record distance for the club being raised to 1,330 ft., by Mr. Williamson's model. As the afternoons are drawing in and becoming colder, it was decided that next week's meeting would be the last for the season, also that the weekly flying meetings should again take place in the early spring. Numerous prizes have been offered, and this alone augurs well for the success of the next season's meetings. A series of debates and lectures are in course of preparation.

## Palmer's Green & District Model AeC. (15, MOFFAT RD., N.).

MEMBERS of the above club showed great keenness on Saturday by turning up and flying their models in a strong and gusty south-west wind. However, in spite of the adverse weather conditions, good flights were made, the outstanding features of the meeting being the performances of Messrs. E. and B. Brown.

Mr. E. Brown's work was done with his "off-the-ground" model, which flew long distances at very considerable altitudes. His machine, it should be mentioned, on every occasion took off from the grass. Mr. B. Brown's flying was with a 4 ft. "tail-behind" model of his own construction. The behaviour of his machine was well worthy of note, as, in the teeth of a stiff breeze, it flew 150 yards, and then fouled a tree. Moreover, it climbed well and was very stable. Messrs. Trollope and Lingard were also responsible for some good flying, although Mr. Lingard's Mann model was sadly handicapped by lack of power.

At the meeting held on Nov. 3rd an annual subscription of 2s. was decided upon for the time being, and a committee of three were elected, namely, the Vice-Chairman, and two other members, Messrs. E. and B. Brown. Mr. R. L. Rogers was unanimously elected secretary and treasurer.

## St. Mary's Model AeC. (THE VICARAGE, KINGSTON, PORTSMOUTH).

THE weather was grand for flying on Saturday, and the members took full advantage of it. Mr. Eburne distinguished himself by creating new distance records with three flights of over  $\frac{1}{4}$  mile each. Unfortunately his machine could not be induced to keep straight all the time it was in the air, but each time after about 300 yards straight it circled to the right, and finally came to earth

$\frac{1}{4}$  mile in a straight line from starting place, so that the actual distance must have been considerably greater than this. Other flyers did not do more than 200 to 300 yards, owing to circling.

The best duration trial was made by Mr. Johnson with 30 secs., Mr. Restall being second with 15 secs., and Mr. Eburne third with 12 secs. Mr. Eburne undoubtedly had hard luck in the duration contest, for, after the first trial, which was cut short by a heavy gust turning the machine up into the wind, causing it to lose way, the propeller spindle broke when winding up for a second try.

As novelties, Mr. Murray's O.P.I.I. machine, and a monoplane of modified Dunn type are worth recording, although it was their first time out, and they require tuning up.

The afternoon's sport was brought to a close by some "illuminated" flights by Messrs. Johnson and Restall. During these, Mr. Johnson had the misfortune to have his machine rather badly burned. Owing to a wire stay breaking and catching one of the rubber motors, the model came down, and the "sparkler" damaged the main plane.

## Scottish AeS. (Model Aero Club) (6, McLELLAN ST., GOVAN).

MISERABLE weather attended the meeting of members at Winton Drive last Saturday. Notwithstanding the elements several good flights were witnessed, particularly by Mr. Balden's model, which on one occasion flew 802 ft., which is now the official club record. Mr. Mills' biplane also flew well, but managed to get smashed up near the close of the meeting. Mr. Balden had the misfortune to lose his model on the roof of a dwelling-house near by. Vigorous but futile were the efforts made by the servant to dislodge it. A flying meeting will be held to-day (Saturday) at the public park (Renfrew) when several new and somewhat original machines will make their first appearance. Should the weather be favourable, some fire balloons will be set off. A large attendance of members and friends is requested.

There will be another flying meeting next Saturday, the 18th, at Barrhead, for more attempts on the duration record.

## Yorkshire AeC. (Model Section) (5A, HULLAND ST., LEEDS).

CARLTON HILL ground is not altogether suitable for model flying, owing to its being surrounded on all sides with buildings, and the condition of the surface. Last Saturday's competition was therefore postponed till to-day, Saturday, November 11th, when it will be held in Becketts Park, Headingley,  $1\frac{1}{2}$  car stage on Headingley car from town. Will all members please make an effort and meet not later than 3.30, as the afternoons are getting short?

## Bristol Model Flying.

A MODEL-FLYING meeting was held on the Downs (Sea Walls) on Saturday last. In spite of a strong and unusually gusty wind, models made by Messrs. Smallcombe, Edgar, Smith, Pearce and others did very good flights. Several Smallcombe-type models flew very well, and one of the original Smallcombes reached a height of 60-70 ft. The wind, however, was much too strong for competition, so this had again to be postponed. Next meeting will be held at same place to-day (Saturday), at 3.30 p.m.

There should by now be enough model fliers in Bristol to form quite a useful club, so competitors are asked to come ready-armed with suggestions.

## An American Aero Show.

ANNOUNCEMENT was made at a dinner given by the Aero Club of America the other day that the club proposed to organise an aeronautical exhibition to be held in the Grand Central Palace, New York, during next May. With a view to encouraging exhibits from Europe it has been decided to make no charge for space.

## A New American Record.

AT the recent St. Louis meeting, on October 19th, Howard Gill, on one of the Wright biplanes, succeeded in beating the American endurance record. He was flying for 4h. 16m. 35s., a considerable advance on the late St. Croix Johnstone's record.

## The Wright Hydro-Aeroplane.

VERY successful trials have been made with the Wright triplane, fitted with floats, with which Frank Coffyn has been experimenting over Lake Michigan. On the 19th ult., with Mr. Russell A. Alger, he flew across the lake a distance of 23 miles in 26 $\frac{1}{2}$  minutes. They returned to Detroit in the morning. On the previous day Coffyn flew with two passengers, Russell Alger and Fred Alger, the total weight being 598 $\frac{1}{2}$  lbs. Several ladies have also been carried for trips over the lake.

## Moisant School to Shift to Florida.

As it would be practically impossible to continue their school at Hempstead Plains, near New York, during the winter months, the Moisant firm are planning to open a winter school at Florida, and it is possible they may organise another in California.

## Two Years Before the Wrights.

IN view of the remarkable results being obtained by the Wright Brothers with their glider at the present time, an article in our French contemporary, *l'Aero*, referring to some experiments carried out by M. Raymond Hekking, at Larcouet, near Havre, in September, 1909, is of considerable interest. Quoting from the *Petit Havrais* of September 7th, 1909, M. Hekking's machine is described as a biplane of 7 metres span with 25 square metres of surface, and it states that M. Hekking on this machine, without a motor, rose to a height of 25 metres and remained stationary for five minutes. This with a wind blowing from 30 to 32 kilometres an hour. The stability of the machine was maintained by the disposition of the body somewhat as in the Lilienthal glider.

## Trans-American Flight Completed.

ON Monday afternoon, C. P. Rodgers completed his trip across America by flying down to the beach by Pasadena, California, and wetting the wheels of his Wright machine in the waters of the Pacific. He had arrived at Pasadena on the previous afternoon, and virtually finished the long journey of 4,321 miles, which began at New York on September 17th. He set out with the intention of trying to win the Hearst prize of £10,000, but as the regulations stipulated that the flight should be completed in thirty days, in this respect he is not qualified. By a series of exhibition flights, performed at his various stopping places *en route*, he has, however, secured a good deal of cash. His actual flying time for the distance was 82 hrs. 4 mins. On arriving at Pasadena, he was flying at a height of 5,000 ft., and his *vol plané* into the Tournament Park was witnessed by a crowd of about 30,000 persons.



## AIR EDDIES.

*Appropos* of the danger of fires on aeroplanes, a subject that was dealt with in **FLIGHT** a fortnight or so ago, it is interesting to learn that General Roques, probably the most influential person in French military aviation circles, is endeavouring to bring about the establishment of a prize for the encouragement of those inventors who are giving the subject their consideration. The General is, further, at one with our contributor in the opinion that the tanks and supply pipes should be made of a much stronger metal than is at present adopted.

Not long ago, at the exhibition of safety devices promoted by the Ligue Nationale Aérienne, there was on view a petrol tank, the invention of M. Cremaux, who claimed for it an absolute immunity against the risk of bursting. Although definite details are not to hand as to the exact nature of the tank, I have heard it rumoured that within the metal casing is a porous substance that will "occlude" petrol and readily give it up as required, much in the same manner as dissolved acetylene is treated.

I hear that Blackburn has almost completed the first machine of a new type—specially designed for military purposes. Although the new monoplane will bear a strong superficial resemblance to its well-tried prototype, it will differ in that practically the whole of the construction will be of steel.

It is to be hoped that when the Government commence purchasing aeroplanes they will remember that we have British constructors quite as capable of satisfying their demands as are foreign manufacturers.

It must be almost a year ago since we first heard that M. Henri Deutsch de la Meurthe had placed an order with Blériot for a four-seater limousine monoplane. The new machine which is actually in process of construction is, I have been told, modelled to a very large extent on the lines of the 100-h.p. Gnome-engined experimental monoplane which created a good deal of sensation by its weight-lifting qualities in the hands of the late Lemartin at Pau some few months ago. Indeed it was for the purpose of supplying data for the construction of the new "aerocar" that this machine was built.

The body is to be comfortably upholstered and provided with seating accommodation for four passengers. As for the poor pilot, he is destined to occupy an exterior seat.

The Deperdussin firm in France are stirring themselves to still further efforts to lead in the aviation business. Like many of the more important firms they have organised a colony at Pau, in the Sunny South, so that pupils will be able to take their tuition during the winter months, amidst much more pleasant surroundings than would be possible up north. Not only this! they intend following Blériot's example, and form a school for the sole instruction of Army officers. To Aubrun and Busson, the latter of whom has recovered his normal health, will be entrusted the running of this school.

Two of the Deperdussin pilots, Vidart and Delacour, are fixing up arrangements for a flying tour round France, and, if the weather be favourable, it is likely that the tour will take the form of a race; in which case, judging from the capabilities of the two engaged, a

tough struggle should result. They will start from Rheims and gain the coast *via* Rouen.

Captain E. B. Loraine, of the Grenadier Guards, secured his *brevet* on Tuesday last under record circumstances, his case, I believe, being the first on record where a pupil has secured his *brevet* on a 50-h.p. Gnome-engined monoplane, the practice up to the present having always been for the pupils to secure their certificates on special school machines built for slower speed. He has only for a short time been a pupil of the "Valkyrie" school at Hendon, and accomplished the necessary test flights on the latest military type of Valkyrie Gnome-engine monoplane having a speed of a mile a minute. I understand that Capt. Loraine is joining the Army Air Battalion.

Howard Flanders is, I hear, intending shortly to establish a school at Brooklands. Tuition will naturally be given on that excellent production of his, the Flanders monoplane, by its equally excellent pilot, Ronald Kemp, and I sincerely hope that such success will attend their new venture as to fully compensate them for the run of hard luck that pursued them in their attempts to capture the British Michelin prize.

Congratulations to Mrs. de Beauvoir Stocks for being the second lady in the United Kingdom to earn the distinction of certificated pilot of the Royal Aero Club! Her progress during tuition at the Grahame-White School has been of a most consistent nature, and not only does this reflect credit on the methods adopted at that school, but gives rise to the opinion that if she continues with the same keenness to follow the sport, she may soon be classed as the world's most efficient aviatrix.

The many friends of E. V. B. Fisher will be glad to hear that he is making rapid progress towards recovery, and that the doctors have now permitted him to receive an occasional visitor. Let us hope that both Fisher and Hubert will soon be quite themselves again, as aviation in England is undoubtedly impoverished by their absence.

Claude Grahame-White has arrived back in England for a short period in order to take a slight respite from his strenuous work on the other side of the Atlantic, and to direct his rapidly-growing undertakings at Hendon. His firm's factory at Hendon is now in full working swing, and is replete with all the labour-saving machinery necessary for the economical production of all types of air-craft. He intends to return to the States on the 18th of this month, sailing by the "Lusitania." Both his 70-h.p. Nieuport and his 50-h.p. Indian-engined "Baby" biplane have been dispatched to California, which he will make the scene of his operations on his return.

The Indian aero motor, which was mentioned in last week's notes, has been undergoing rigorous tests at the hands of Mr. Grahame-White in America, and I have it as his opinion that as soon as one or two minor modifications have been made the engine bids fair to attain a reputation as the best of its type.

"OISEAU BLEU."

### Damage by the Gale at Oxford.

THE gale which raged last week-end did considerable damage at Port Meadow, Oxford, where six hangars have been erected by Messrs. J. Betts and Co. The sheds were simply lifted up bodily, and came down with disastrous effects to the aeroplanes which were housed in them.

### Reduced Fees for Military and Naval Tuition.

IN view of the Government grant to officers who learn to fly being fixed at £75, the British and Colonial Aeroplane Co., Ltd., have reduced their tuition terms for officers of the Army and Navy to that figure. The fee includes insurance against breakages and third party risks.

### An Aerodrome for Birmingham.

THERE is every probability of Birmingham possessing an aerodrome shortly, as negotiations have been practically completed between the Midland Aero Club and the Birmingham Playing Fields and Open Spaces Society for the use of the Castle Bromwich

playing fields as a flying ground. A hangar has already been erected for Mr. E. T. Willows' dirigible, and as soon as the weather is favourable he will sail the "City of Cardiff" over from Wolverhampton. It is hoped, too, that one or two prominent aviators may be induced to make their headquarters at Castle Bromwich.

### Flying Meeting for Shrewsbury.

UNDER the auspices of the Shropshire Aero Club, a public meeting was held at Shrewsbury on the 3rd inst., with the object of considering the project of holding a flying meeting at the end of the present month. The Mayor, Major Wingfield, presided, and said that Mr. Valentine had hoped to have been at the meeting, but had been suddenly called away to France. Before leaving, however, he had inspected the Shropshire and West Midland Show ground, and expressed a favourable opinion as to its suitability for a flying meeting. Several promises of support towards the prize fund had been received, and it was felt that there would be no difficulty in raising the necessary funds. It was decided to make a public appeal for funds to cover the expenses and prize money, and Mr. F. Lea was appointed hon. secretary and treasurer.

## FROM THE BRITISH FLYING GROUNDS.

### Royal Aero Club Flying Ground, Eastchurch.

WEDNESDAY last week was a perfect flying day in every respect, and several machines were out for practice. Valentine was the first to start, making a run out to Sheerness and back on his Duperdussin monoplane in the morning. He was followed by Frank McClean, piloting the Short twin-engine machine, which was flying exceedingly well.

During the afternoon McClean took up several passengers. His final flight was to Sheerness and back, when he took with him Mr. Fowler, a coming aviator, who is at present engaged in the construction of Maj. Brocklehurst's new machine. Mr. Fowler was much impressed with his flight, and particularly with the sense of security which the possession of two engines gave when flying, the machine giving proof of its ability to fly with both engines throttled down.

The two aviators were accompanied on their journey by Valentine on the Deperdussin, who started almost immediately after them, both machines appearing over Sheerness together. When over the harbour, Valentine made an impressive *vol plané* from a considerable altitude, descending so close to the water alongside one of the huge war ships that his wheels touched the surface and caused ripples which could be plainly seen by McClean and Fowler, who were at that time well overhead in the Short twin-engine machine.

After giving the inhabitants of Sheerness a splendid exhibition of flying, both machines returned to the aerodrome, alighting as it was growing dusk.

During the week Lieut. Samson, R.N., was practising on a Blériot type monoplane recently reconstructed by Short Bros., and he is making good progress in the handling of this speedy type of machine.

On Sunday McClean was again out on the Short twin-engine machine, and during the day took up several passengers, including Capt. Bidder, Mr. George Lloyd, Mr. P. Wright-Anderson, and Mr. H. F. Cobbett; at this time, also, Jezzi was out on his "Baby" biplane, making several long flights, the machine being very steady in the air and making excellent landings.

### Brooklands Aerodrome.

HIGH winds have been the predominating feature of the past week. On Wednesday the elephantplane put up some good straight flights. Blackburn, the pilot, was testing the range of cambers, and found that the machine would only fly with a big cant, owing to the great weight.

The Deperdussin school was very busy, Baldwin, Sabelli and Lieut. Esnie Chinnery were making straight flights on the taxi, and Gordon Bell took up Lieut. Wilkins on the two-seater for an extensive trip at about 1,500 ft. Bertie Rippen, on the Hanriot, was doing straights; we shall expect some circuits out of him soon. Spencer on his machine essayed a *vol plané*, but found that on that type of machine it is harder than it looks. Lieut. Francis Hewlett, flying on the Blondeau-Farman, made some good figures of eight. Maurice Ducrocq ascended to 200 ft., ending with a fine *vol plané*. Fleming was out on the Bristol flying at 500 ft. Then Lieut. Harford went up to pass the altitude part of his test, which he succeeded in doing in good style. Capt. Harrison flew two circuits in good form, and afterwards Fleming took up Roberts, whilst Maj. Benwell did some straight flights.

Thursday was a very bad day, wind and rain preventing much flying being done. Raynham on the Avro, however, did a few straights, and Rippen and Bell, of the Deperdussin, flew on the Hanriot, the latter doing circuits, at Rippen's request, to see if the engine was pulling well enough for a turn.

On Friday Lieut. Hewlett tried for his certificate, but had to descend, as his engine was missing badly. However, he passed his height test, so now only has the 8's to do.

Raynham and Rippen were doing short flights, and Bell flew a couple of circuits on the new racing machine, banking very heavily at the turns.

On Saturday, the only machines to fly were the elephantplane and Blondeau on his British-built Farman. Fleming was starting off with Captain Gordon for a flight when one of the wheels came off, throwing the machine on to its side, and doing quite a lot of damage.

Sunday and Monday very strong gales prevailed. On Tuesday, Bell flew a few circuits on the new racing Deperdussin, but had to come down owing to one of the cylinders over-heating. Raynham on the Avro, did a couple of circuits, but the propeller was not suitable for the machine. Fleming, on the Bristol, took up as passenger Mr. Warren, he afterwards giving Captain Gordon a lesson in steering.

### Filey School (Blackburn Aeroplane Co.).

THE recent stormy weather has made it practically impossible for any flying during the past week. Mr. Oxley was, however, out on Wednesday trying a new machine, but the very strong wind only permitted of his getting in a little rolling.

The large passenger-carrying machine, which is fitted with a 60-h.p. Renault, is now complete and ready for flying at Filey, and is only waiting the opportunity of fair weather. It is expected that this machine will easily lift three passengers.

### Lanark Aerodrome (Lanark, N.B.).

A GALE, which commenced last Sunday week and continued throughout last week, prevented all attempts at flying, but the two French pupils took their first course of lessons in the hangar. Mr. Ewen, who expected to be able to fly the Deperdussin back from Edinburgh, had to give up the attempt and bring the machine back by rail. On Sunday last the gale reached its climax, getting into the bad hurricane stage, about the worst in Scotland for the last thirty years.

Since then the wind has steadily decreased, giving a fair prospect of renewed work for the pupils and staff before the end of the week.

### London Aerodrome, Collindale Avenue, Hendon.

Blériot School.—Monday, last week, wind and rain had full possession. On Tuesday Messrs. Prensiel, Tremlett, Sacchi, and Allen were all making straight flights, showing great progress. Mr. Parr flew three times around the aerodrome, and both he and Mr. Sacchi are now ready to pass the tests for their certificate, but prefer to get some more practice, especially in landing, before attempting the official trials.

Wednesday the weather was beautiful, and all the pupils were out, Messrs. Tremlett, Prensiel, Sacchi, and Allen continuing their practices, whilst Messrs. Welburn, Potet, and Briere were rolling on the school Blériot monoplanes.

Mr. Driver went out with his 50-h.p. Gnome-Blériot, making two long flights, one lasting for 40 mins., at a height of between 3,000 and 4,000 ft., finishing up with a graceful *vol plané*.

M. Salmel was also out on his Blériot, practicing high flying. Later on he grasped an opportunity of having a race against an express on the Midland line, which runs close to the ground, and passed it easily in a few seconds. Mr. Gustav Hamel was also out on the two-seater Blériot, taking up several passengers.

On Friday it was too windy again for practice, and on Saturday, although the wind was still very high, Mr. Hamel took up a passenger who, being an expert sailor and used to long sea journeys in his small yacht, thoroughly enjoyed the flight; several ladies also wanted to ascend, but both Mr. Chereau and Mr. Hamel thought it more prudent to postpone the flights for a calmer day.

Grahame-White School.—Early on the morning of Wednesday of last week, Mrs. Stocks brought out the Gnome-Farman for the purpose of making an attempt to obtain her *brevet*. After a preliminary circuit or two to test the condition of the atmosphere, she landed to acquaint the official observers, Messrs. E. F. Driver and H. Salmel, of her intention to carry out the necessary flights. Ascending to a height of 500 feet, she performed a series of five figures of eight. The wind, by the time this first test was completed, had risen considerably, and so Mrs. Stocks wisely decided to postpone the completion of the examination till the evening. At four o'clock she again brought out the machine and carried out the two further tests in excellent style. Mrs. Stocks is thus the second lady to be awarded a British pilot's certificate, and, in celebration of the event, she proceeded to give a passenger flight to her friend, Mrs. Gates. This, we believe, is the first time on record on which a lady passenger has ascended on an aeroplane controlled by a lady pilot.

The weather during the remainder of the week was too awful for words. Even when Lieut. Parke flew on Saturday last, the wind was "doing" an average velocity of 22 miles an hour, and as the machine rocked and dived under the influence of the treacherous gusts in a manner none too pleasant to watch, the onlookers were visibly relieved when he descended.

Mr. Grahame-White, on his return from the United States, was not long in renewing his acquaintance with what might almost now be considered his natural element, for on Tuesday evening he gave passenger flights on his old exhibition machine to the pupil Fowler and to a friend, Mr. Baker.

Valkyrie School.—Early in the morning of Tuesday last week Capt. Loraine was out making several fine flights on the Gnome-Valkyrie racer. At the same time Chambers was practising on the school machine. Later Mr. Barber was up on the Valkyrie No. 10, making several pretty flights.

Conditions were ideal next day early in the morning. At 7 a.m.



Capt. Loraine ascended on the Gnome-Valkyrie, and rose to 300 ft., and then carried out several figure eights. On descending he decided to fly for his certificate. He then rose several hundred feet, and made the first distance flight of five figure eights for his *brevet*, attaining quite twice the necessary altitude. His *vol plané* descent was very fine. Messrs. Driver and Salmel officially observed this flight. Consistent gales took charge of the air, and prevented him making his second test flight. Just before dark, Mr. Barber gave an extended passenger flight to Miss Franklin. At the same time, Ridley-Prentice was out on the school machine, and made two circuits of the aerodrome at an altitude of 100 ft., descending *en vol plané*, with a very light landing. Chambers took over the machine and made an excellent circuit.

Heavy fog prevented a start on Friday before 9 a.m., when Mr. Barber ascended on No. 11. He had only accomplished a few circuits before a strong wind rose, gradually increasing to the gale which prevented any flying during the week-end.

At 7.40 on Tuesday last, Captain Loraine ascended on the 50-h.p. Gnome-Valkyrie, and made his second series of figure eights for his certificate. During this flight an altitude of at least 300 ft. was attained. On descending, the machine ran outside the limit of 50 metres from the observers, and to clear up any doubt, Capt. Loraine re-ascended and made two more circuits, landing perfectly within 20 metres of the observers. Messrs. Driver and Salmel acted as official observers. We believe he is the first pupil to secure his *brevet* on a 50-h.p. Gnome-engined monoplane.

#### Portholme Aerodrome (St. John's Road, Huntingdon).

The only flying at Huntingdon during the past week was by Mr. Moorhouse on Wednesday during a lull in the awful weather which has prevailed. He left here at 4.50 p.m., and made a very fine flight to Cambridge, circling the town twice, then returning to Huntingdon, where he arrived at 5.20, landing in the light of petrol flares, which had been set going as a guide to the aerodrome. As for school work, the weather was, of course, too bad all the week for any air progress.

#### Salisbury Plain.

SUNDAY, the 29th ult., was a miserable day, but a little flying was possible in the morning. Gilmour went for a

cross-country flight on the military monoplane, carrying Mr. Dashwood Lang as passenger. The machine was perfectly stable in the wind, which, however, became so bad as to force them to descend between Woking and Farnborough. School work was also in brisk progress during the few calm moments which were vouchsafed during the day.

On the Saturday, at Filton, Mr. Pixton was upon a Bristol biplane, making several circuits, and landing with splendid *vol planés*, making three flights in all, having Mr. Hotchkiss as passenger.

Flying has been, as everywhere else, considerably restricted during the past week owing to the hurricanes which have prevailed. The conditions all day Monday were such as to render flying quite out of the question.

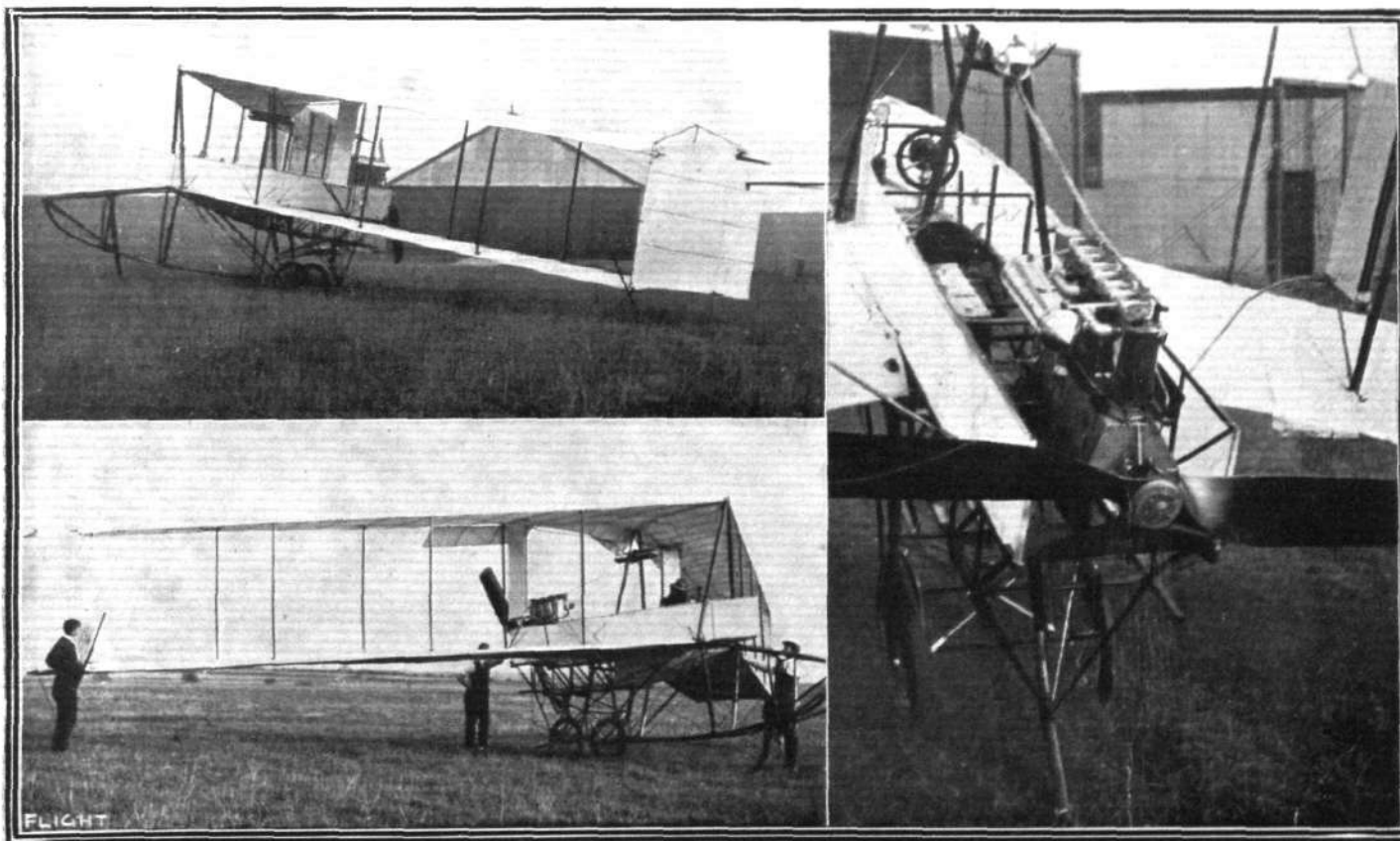
On Tuesday morning the weather seemed a little calmer, and after the usual trial Mr. Mellersh went up for a solo flight, remaining in the air for about 15 mins., and performing some very fine circuits. At the next favourable opportunity this pupil should easily pass the test for his certificate. By the evening the wind had attained such velocity as to prevent further flying.

On Wednesday morning, as the wind had not abated, no flying was attempted. At 3.30 in the afternoon, however, Busteed made two trials on No. 7, testing the engine, which had been tuned up, and which he found to be working splendidly. At 3.30 Jullerot made two solos on No. 43, after which Mr. Mellersh started out for his certificate, being observed by Mr. Cockburn and Lieut. McArthur, and completed the first part of his tests in very good style, darkness preventing him passing the whole of his tests. Busteed also took Lieut. Ashton and Lieut. McArthur for flights.

On Thursday a terrific gale was blowing the whole of the day, interspersed with heavy rain, which made outdoor work impossible.

Practically all the pupils at the school are now ready to undergo the tests for their certificates, and, given favourable weather, a large number of certificates should quickly fall to the lot of the Bristol Co.

A strong wind was still blowing on Saturday morning, but, after a trial had been made, Lieut. Joseph made a straight solo flight, and Busteed took McArthur and Stuart for tuition flights, after which nothing further was done. The evening was too rough to permit of any flights.



Three views of Lieut. Dunne's latest aeroplane at the Royal Aero Club's Eastchurch flying ground.—The top photograph shows the machine after its first flight with Lieut. Dunne in the pilot's seat, the lower view giving the machine from the opposite side. On the right the photograph of the pilot's "boat" gives a good idea of the ample room available. To the right of the steering wheel is seen the torque-flap lever; the torque-flap itself is just visible on the right. On the left is the Bosch coil and Elliott counter. The petrol tanks are placed on either side of the boat immediately in front of the engine.



# FOREIGN AVIATION NEWS.

## Another Antoinette Military Pilot.

AT Mourmelon, on the 31st ult., Lieut. Fiorelline completed his tests for his superior military certificate on an Antoinette monoplane. He covered the 101 kilometres from Mourmelon to Nettancourt and back in 1 hr. 20 mins., flying mostly at a height of 600 metres.

## Pascal a Military Pilot.

FLYING on his Deperdussin machine on the 31st. ult., Pascal succeeded in making the necessary tests for the superior military certificate. His course was from Etampes to Orleans and back, and when rounding Orleans on the last trip, he dropped a note to the timekeeper, M. Barberon, thanking him for his services.

## A Clement-Bayard Monoplane at Chateaufort.

ON the 31st ult. Guimard had his Clement-Bayard monoplane out at Chateaufort, and was flying across country for an hour and ten minutes, covering altogether about 100 kiloms. Later in the day he was at work again, and in the air for half an hour, and the next day was flying for over 45 mins. He also made lengthy trips on the 2nd and 3rd inst.

## Weight-Lifting Tests on the Sommer.

ON Monday, at the Sommer works at Douzy, Bathiat was flying a monoplane for over an hour, the machine having on board sufficient supplies for a ten hours' flight. On the 31st. ult. he took up a useful load of 180 kilogs. at Rheims, and flew over to Douzy in 52 minutes.

## Flying from Rheims to Issy.

MOUNTING one of the Voisin machines which had been at Rheims for the military competitions, Mahieu flew back to Issy in a couple of hours on Thursday of last week. The mist was very thick, and made his task a difficult one, but the Eiffel Tower enabled him to pick up his bearings on reaching Paris.



The statuette which Adolf Warchalowski, after flying with it on his biplane from Wiener Neustadt to Castle Schwarzenau, presented to Archduke Karl Franz Josef and his bride as a wedding gift from himself and his brother Auguste. This incident was recorded recently in FLIGHT.

## From Orleans to Bourges on a Farman.

ON his Gnome-engined Farman biplane, Roger, on the 2nd inst., accompanied by a lady passenger, Mdle. Gaby d'Orville, started from Orleans, and, rising to a height of about 1,200 metres, flew over to Bourges, reaching there in 1 hr. 12 mins.

## New Caudrons for French Army.

ON the 2nd inst., at Rue, René Caudron tested two new biplanes for the French Army, which were afterwards taken over by Capt. Destouches. The biplane rose to a height of 580 metres in less than ten minutes with the regulation load. At the time a breeze was blowing at the rate of 8 to 10 metres a second.

## A Nieuport School at Montpellier.

THE Nieuport firm have decided to run a winter school in the South of France, but instead of locating themselves at Pau, they have decided to make their headquarters at Montpellier. Chevalier has been placed in charge.

## At the R.E.P. School.

ON a two-seater R.E.P., on Friday of last week, Amerigo took Captain Wood for a long excursion over Buc, Guyancourt, Voisins-le-Bretonneau, Chateaufort, and Toussus-le-Noble. Bobba was also flying for an hour, making some sharp turns and steep *vol planés*.

## Another Blériot French Military Pilot.

ON the 3rd. inst., Lieut. Marlin, of the Blériot Military School at Etampes, completed his test for superior military certificate, flying over the course from Etampes to Orleans.

## The Coupe Pommeroy.

THE second section of the competition for the Coupe Pommeroy, which closed at the end of last month, was won by Vedrines, who also, it will be remembered, won the first section. His winning flight in the second section was from Paris to Angoulême, a distance of 395 kiloms., made during the Paris-Madrid race.

## The Prix des Escales.

QUITE a deal of excitement was provided at the Groues Aerodrome at Orleans during the last few days of October, when the competition for the Prix des Escales became very keen. Allard, with his Caudron, was leading for some time, and seemed in a safe position, when he had the misfortune to capsize his machine, thus allowing Chaves, on a Blériot, to get in front. The latter won the first prize of 3,000 francs with 27 landings, Allard being second, he taking 2,000 francs, with 23 landings. Dancourt, on a Viale-engined Blériot, was third, with 20 landings.

## Flying to a Cemetery.

WISHING to follow the French custom of visiting the cemetery on All Hallows' Day, in order to honour his brother's grave, Deneau, an aviator, decided to travel *en aeroplane*. He started on Wednesday of last week from Chartres, and in a few minutes landed in the Mainvilliers cemetery. He later returned to Chartres, circling over his parents' house on the way back.

## A Deperdussin School at Pau.

FOLLOWING the example of most other schools, the Deperdussin firm have opened a branch at Pau for the winter season. The first flights were made on Friday of last week by Pascal, chief of the Etampes school. Aubrun is to be in charge of the new branch, with Busson as his assistant.

## R.E.P.'s and the Coupe Pommery.

THE three R.E.P. pilots entered for the Coupe Pommery had very hard luck. All three, Bobba, Gibert and Amerigo, made three attempts, but each time they were obliged to turn back on account of fog. In his three tries Amerigo covered a good deal more than 400 kiloms., the minimum necessary to win the cup.

## How Garros Overcame the Difficulty.

ON arriving at the Pignonnet aerodrome at Aix-en-Provence on the 1st inst., Garros expected to find his Blériot machine erected and ready to fly. As a matter of fact, he found it had not even been delivered. He at once secured a motor car, and, with his mechanics, drove to Pertuis, where the machine was calmly lying. It was quickly erected, and Garros then flew it over to the aerodrome, greatly to the delight of a large crowd which had gathered to see some flying.

## AEROPLANES AT TRIPOLI.



THE AEROPLANE IN THE ITALIAN-TURKISH WAR.—Members of the Italian Army Aviation Corps at the front. From left to right, Lieut. Poggi, Lieut. de Roda, Capt. Piazza (Commander of the Corps), Lieut. Falchi, Lieut. de Tondo (behind on horseback), and Lieut. de Marro.)

MR. QUINTO POGGIOLI, who will be remembered by our readers as having taken his pilot's certificate in England under the Royal Aero Club's regulations, sends us some interesting details of the practical work being carried out in Tripoli in connection with the Italian-Turkish War. Mr. Poggioli writes:—

"On the 25th Oct. Capt. Piazza with his Blériot, and Capt. Moizo on his Nieuport, observed three advancing columns of Turks and Arabs of about 6,000 men. The Italians, after receiving this information, could successfully calculate distances and arrange for their defence.

"On the day following, the 26th Oct., the battle of Sciara-Sciati took place, resulting in the loss to the Turkish Army of 3,000 men. During the battle two aeroplanes, Lieut. Gavotti with his Etrich and Capt. Piazza, were circling the air. The flights took place above the line of fire, so as to be able to direct the firing of the big guns from the battleship 'Carlo Alberto,' and also of the mountain artillery. The aeroplanes were often shot at by the guns of the enemy, but with no result. The only difficulty they had was caused by the currents of air caused by the firing of the big guns.

"Previously, on the 22nd Oct., Capt. Moizo when reconnoitring passed over an oasis, and, in order to observe better the movements of the enemy, descended to an altitude of about 200 metres, and in consequence the wings of his machine were pierced by bullets in six or seven places, and also a rib was broken.

"On November 1st Lieut. Gavotti (Etrich) flew over the enemy, carrying four bombs, carried in a leather bag; the detonator he had in his pocket.

"When above the Turkish camp, he took a bomb on his knees, prepared it and let it drop. He could observe the disastrous results. He returned and circled over the camp, until he had thrown the remaining three bombs. The length of his flight was altogether about 100 kiloms.

"The bombs used contained picrate of potassa, type Cipelli."

THE first official communication by one of the belligerents, in regard to the use of aeroplanes in actual warfare, has been issued by the Italian authorities, dated November 5th, from Tripoli. As a matter of historical record we reproduce the text in extenso as follows:—

"Yesterday Captains Moizo, Piazza, and De Rada carried out an aeroplane reconnaissance, De Rada successfully trying a new Farman military biplane. Moizo, after having located the position of the enemy's battery, flew over Ain Zara, and dropped two bombs into the Arab encampment. He found that the enemy were much diminished in numbers since he saw them last time. Piazza dropped two bombs on the enemy with effect. The object of the reconnaissance was to discover the headquarters of the Arabs and Turkish troops, which is at Sok-el-Djama."

## A New Machine at Havre.

A BIPLANE, or, rather, double monoplane, as the inventor, Capt. Hayot, prefers to call it, has just been seen in the air at Havre, piloted by Molon. The main planes are of 10.5 metres span, and have a surface of 48 square metres. The top plane is placed a good

deal in advance of the lower plane. There is a monoplane elevator tail, with a vertical rudder. The machine may also be steered when rolling along the ground, as the landing wheels are operated by a lever. The engine is a 70-h.p. Gnome, driving a 2.5 metre propeller.



## THE FRENCH MILITARY COMPETITIONS.

IN our last issue we were able to record the closing of the preliminary competition at Rheims, and on the 1st inst. it was officially announced that the Military Commission had decided to pass the seven following machines: Weymann's Nieuport (100-h.p. Gnome), Renaux's Maurice Farman (70-h.p. Renault), Barra's Maurice Farman (70-h.p. Renault), Fischer's Henry Farman (70-h.p. Gnome), Frantz's Savory (70-h.p. Labor Aviation), Prevost's Deperdussin (100-h.p. Gnome), Vedrines's Deperdussin (60-h.p. Anzani). It was also decided to refer to the Superior Commission the question of admitting the 100-h.p. Gnome-engined Breguet, piloted by Moineau, as well as Bregi's 140-h.p. Gnome-Breguet. Incidentally it may be mentioned that a British Commission, consisting of Captains Fulton, Sykes and Barrington Kennett, arrived at Rheims on October 31st., in order to witness the final competition. At their meeting on the following day the Superior Commission decided to admit the two Breguets, so that nine machines are left in to take part in the final test, consisting of a 300 kilometre flight from Rheims to Amiens and back, which was to have been held on Saturday. A slight alteration was made

in the rules, allowing competitors to take as much petrol as they liked, instead of having to take a definite quantity, which had been previously declared.

It really seems as though the fates are against the final being run off, for on Saturday morning the wind and fog rendered flying practically out of the question; but, as the Farman representatives wished to start, the Commission, after consulting with the entrants, decided that they could not refuse permission. Barra was accordingly the first to be timed away, but he had only covered a few kilometres when he was obliged to land. Renaux had ignition trouble, and so could not start, while Fischer, after a trial, decided that the wind was much too strong. The Commission met again in the evening, and decided to start on the following day if the weather was more favourable. As a matter of fact, it was, if anything, worse, and so Sunday had to be written down a blank day, while Monday was the same.

On Tuesday several attempts were made to start, but the only one to get away was Waymann, and he was obliged to land 8 kiloms. from Rheims through a petrol pipe breaking.

## AIRSHIP NEWS.

### Trial Trip of the "Akron."

ON Saturday last Mr. Vaniman had his new airship, with which he proposes to attempt a trans-Atlantic voyage, out for a trial trip at Atlantic City. The airship carried out one or two evolutions, before suddenly landing in a swamp about eight miles from its headquarters. There it had to remain for some hours until high water, when a boat went to its assistance and towed it home.

### The New Lebaudy Out Again.

ON the 31st ult. the new Lebaudy military dirigible "Lieut. Selle de Beauchamp" was out for altitude tests imposed by the military authorities. No difficulty was experienced in getting the airship to a height of well over 1,000 metres.

### Gross "M 2" at Cologne.

ON the 3rd inst. the Gross military dirigible, "M 2," was away from its headquarters at Cologne for a couple of hours, during which speed and altitude tests were carried out. In the afternoon of the same day it was out again, voyaging for about three hours.

### A New Propeller for Dirigibles.

TESTS have been recently carried out at the German Military Airship Park, at Tegel, with a new arrangement for propelling airships. The old envelope of "Parseval I" has been inflated, and carries a car in the front of which has been fitted a 50-h.p. Argus

motor. In place of the usual propeller the motor operates a sort of endless venetian blind, the blades being made of fabric on an aluminium framework. The trials are said to have been very successful, and there was no vibration or shaking.

### "Schwaben" Takes a Royal Load.

THERE is no doubt that the voyage of "Schwaben," on Thursday of last week, was unprecedented from the point of view of the aristocratic passengers who accompanied it. The party consisted of four sons of the Kaiser, Princes Eitel Friedrich, Auguste Wilhelm, Oscar and Joachim, as well as the Princess Augusta Wilhelm, Prince Friedrich Leopold of Prussia, Prince George of Greece, and two Ministers, Herr Von Breitenbach (Railways) and Herr Delbruck. The start was made from Johannisthal, and the dirigible was away for about two hours, during which it crossed Berlin to Potsdam, where it circled above the royal castle, and then came down to the surface of Lake Schwielow for some time before returning to Johannisthal.

### The "Schutte Lanz" Out Again.

As a result of a first trial trip, several slight modifications were decided upon with regard to the steering-gear of this airship. These alterations having been completed, she was out again for a little over an hour on the 31st ult., during that time passing over Mannheim, Heidelberg and Schwetzingen.

## CORRESPONDENCE.

\*.\* The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which have appeared in **FLIGHT**, would much facilitate ready reference by quoting the number of each letter.

### The Aeroplane in War.

[1415] *Corrigenda* for letter 1,404:—

Semi-colon after £4,000—delete "and," two words before.

"60 or 90" m.p.h. should be "60 or 70."

600 ft. or 700 ft. should be yards.

You will observe that the talk of Germany spending £1,500,000 on aeroplanes, and the official statement by Col. Seely that France has now 200 aeroplanes, both favour my contentions.

Nov. 1st.

R.A. (Retired).

### Subsidized Sheds.

[1416] The article in your edition of the 28th October on the subsidizing of aeroplane sheds was happily inspired, and no doubt great and lasting benefit to the whole nation would accrue, if only there was the slightest chance that the authorities appealed to would display the imaginative foresight necessary to initiate such a scheme. But, alas! all evidence to date points to the certainty that in England no one in authority, whether country landowner, town councillor, city mayor or Minister of State, seems to consider aviation a subject for serious consideration.

This being so, your article no doubt merely enshrines a pious hope destined to float indefinitely in the realms of fancy; and

as an intensely moderate scheme is but little less unlikely of consideration than the most far-reaching, why not amplify to heart and mind's content?

For instance, let the municipal councils of every town or city of any importance at once start a municipal aero station. The right sort of land, conveniently close to a main road leading into the town, can now be bought cheaply enough. By agreement and legislation recognised signs could be erected and rules drawn up for alighting and starting. A simple and possibly efficient scheme would be to have the centre of the station marked, for guidance by day, by a large white surface of definite shape, level with the ground, and by a bright white light at night. The perimeter of the manoeuvring ground would be defined by red posts and lights; and all traffic would move so as to keep the white light on the left hand.

Hangars, hotels, repair shops and so on could be added as the aerial traffic grew, and a service of cars or a tramway into the town started.

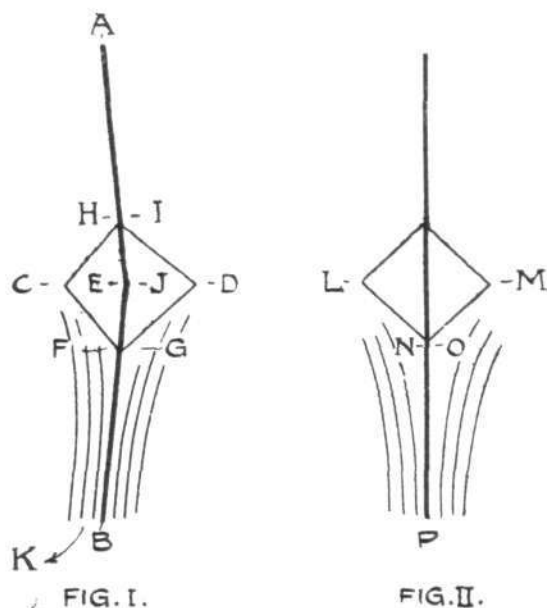
A promising programme, one would think; present cost, small; future gain, incalculable. But no! anyone can guess exactly what will happen. The need for aerial stations will be gradually met by private enterprise. At last, when the traffic has grown enormously, public opinion will force the authorities to act, and then, grudgingly and with immense inconvenience, delay and expense to all concerned, the stations will be bought and placed under proper supervision.

Oh, the chances, soon to be lost for ever, that the birth of aviation is still sending a-begging!

N. E.

### The Redivalls Monoplane and Natural Stability.

[1417] Mr. W. Le Maitre evidently misunderstands my Redivalls monoplane principle. I wish to point out that H.M. Patent Office did not quote his 1909 patent against my application. Nor can I trace any resemblance of the "Plan of an Aeroplane," included in *FLIGHT* of November 19th, 1910, over his signature, to my monoplane. My principle is fully described in your valuable publication, dated March 11th, this year. I then asserted that "if upset by the wind a bird merely throws out its wings rigidly at a dihedral angle to its body. As it falls the air meets with the resistance of the bird's body as it passes the wing. As the wings are at a dihedral angle the said air meets the resistance of the upper part of the body first,



and naturally turns the body over slightly, thereby commencing the return to the horizontal of the wings." This theory is illustrated in Fig. I. It will be seen that a monoplane of my design has been capsized. In falling, the air, meeting with resistance at the panel, CF, naturally turns the plane, FB, in the direction of K. In Fig. II we find a monoplane of a different design, i.e., central box-kite arrangement placed diamond fashion, and a straight plane. Unless a low C.G. were used this monoplane might fall to the ground vertically owing to the equal righting action of the V-shaped planes, LNOM, or it might turn upside down. There would be nothing to prevent the latter event. It will be noticed that my central planes are larger under the planes than over, in order to

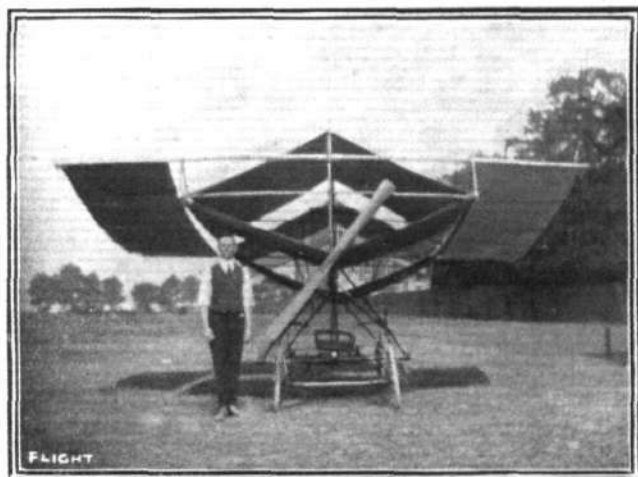
counterbalance the effect of a side-wind blowing on panel, CF, plus the side-wind blowing under the plane, BG. Also my irregular diamond centre is divided into two sections, CFEH and JGDI, by the plane, BJA.

When I commenced my model-aeroplane building (very soon after Santos Dumont's historical first flight), I immediately turned my attention to natural lateral stability. The self-righting action of the V-principle was easily apparent to me. (Who has not seen this principle embodied in a shuttlecock and in a boat?) Therefore I tried it on a Voisin-type biplane. I omitted the central portion, and inserted a V-shaped plane instead. This (Fig. III) biplane righted itself naturally. Had I understood the process then of taking out a patent I might have done so. When I tried the V-principle on a monoplane it turned upside down when flown vertically. About this time it occurred to me that, if the resistance of air made an aeroplane rise, then resistance of air could be made to right it as it fell. So I placed a central panel on the top of a monoplane having a dihedral angle. The resistance to a side-wind offered by this panel being too great, I replaced it by two sloping panels, i.e., in the form of an inverted V. Then, to further counteract the effect of side-wind, I added two more sloping panels. My reason for placing them in the centre was to prevent a weakening of the main plane. It will therefore be seen that my monoplane is really a multiplication of planes having dihedral angles, BFC, CHA, FEH and GDI, which, being more acute than the inverted dihedral angles BGD, DIA and FCH, naturally right my monoplane. To conclude this rather lengthy letter, I desire to add that, by the time these lines appear in print, I hope to have demonstrated the efficiency of my monoplane to the managing-director of a famous aeronautical company with whom I have an appointment.

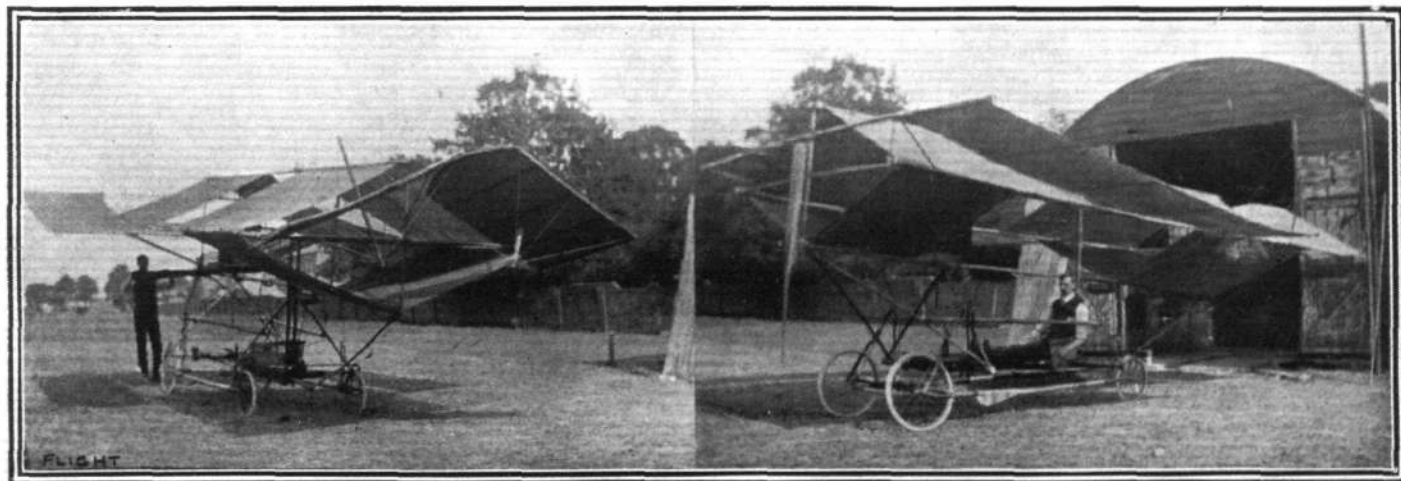
WILL. H. BOOTH ("REDIVALLS").

### Re Naturally-Stable Machine.

[1418] Having read with considerable interest the letters of Harold Kelk and Will H. Booth, and having ourselves, for a long time, been experimenting on the lines adopted by these gentlemen,



A view from the front of Messrs. Forbes and Arnold's novel machine.



Messrs. Forbes and Arnold's full-sized machine which they have built as the result of successful experiments with their models. Two three-quarter views.



we send you photographs (reproduced herewith) of our full-size machine, which we have built as a result of our successful experiments with models.

We patented it in 1909. The patent No. is 20846, and we append particulars of size which, with the photograph now sent, will enable you to see the principles upon which we have built:—Length, 24 ft.; width, 16 ft.; height, 10 ft.; surface, 350 ft.; weight with pilot, 450 lbs.

The principal objects we studied to accomplish in creating our machine were—1st, safety; 2nd, natural stability; 3rd, simplicity in steering, elevating, &c.; 4th, small motive power; finally, low cost of building. The lifting surface is so arranged that, in the event of the engine stopping, the machine will descend in a series of glides, and settle on a level base.

It is seeing that our ideas are apparently coming into vogue that it seems advisable to explain our position.

Leigh-on-Sea.

VICTOR F. FORBES.  
ARTHUR J. ARNOLD.

## Cylinder Cleaning.

[1419] In your edition of the 4th inst., under the heading "Air Eddies," you were good enough to refer to us as the originators of a new method of cylinder cleaning, but we feel it is only fair to the patentees to point out to your readers that the process referred to is the "Cyclean" (Watkins Patent), the agency of which has been granted to us, and we are at any time willing to give anyone interested a demonstration at our works, Byfleet Road, Weybridge (or upon their own premises by appointment), of this time and expense-saving device.

ITALA AUTOMOBILES LTD.  
(CHARLES JAMES FOX, Works Manager.)

Byfleet Road, Weybridge.

## MODELS.

### The Limit of Long-Distance Flyers Propelled by Elastic.

[1420] I must apologise to Mr. Hill for my delay in replying to his interesting letter (1397), but the "tuning up" of batches of what he would presumably term "flying elasticks" has left me with very little spare time. Mr. Hill asks, "Is stating the limits of rubber making an attack upon it?" In his former letter (1368) he speaks of "power-driven scale models" as being "real model aeroplanes," the inference being that machines propelled by rubber are not of this category at all. What is this but a depreciation of rubber as a motive power? It is interesting to note that in view of his strong views on the subject of rubber, Mr. Hill should exhibit at the recent *Model Engineer* Exhibition a model fitted with this means of propulsion.

Mr. Hill seems to classify all long-distance models under the heading of "flying sticks." But why blame the machines when the rules that govern the competitions are really at fault?

Whatever may be the custom among theoreticians, it is a fact that among practical model makers "power" and "torque" are interchangeable terms, and that the power of a rubber motor is actually the "torque."

As a practical model maker I must confess that I am quite unable to understand Mr. Hill's remarks about the "power" (does he mean "torque"? ) of rubber motors. He states a typical case of a 6-strand motor which runs out in 30 secs. Then he speaks of a 12-strand motor running out in the same time. Experience teaches that a 12-strand motor runs at approximately twice the speed of a 6-strand one, added to which it is impossible to get anything like the number of turns on the former as on the latter. Gearing is not practicable, and the use of gigantic propellers makes the model too obvious a "freak." Then he states a case of the same 12-strand motor running for 60 secs., which is even harder to understand. Unless it were of exceptional length, the comparative fewness of the turns and the terrific speed of its propeller would make this quite out of the question.

Surliton.

R. F. MANN.

### Aviation at the Scottish National Exhibition.

[1421] With further reference to my letter, No. 1405, may I add a few remarks to guide the footsteps of the unwary scale model builder. I have just received my model back from the aviation pavilion in the following condition:—Propeller and one tyre stolen, rudder, rudder post and control lever broken. This particular model, by the way, has been one of the most fortunate of the show as regards breakages. It is remarkable that all the "aviation" goods, such as ships' binnacles, sounding logs, steam engines, &c., which were dumped down in the Aviation Hall have, apparently,

escaped damage. To any of your readers who contemplate exhibiting their scale models in a public place, I would suggest the following hints if they cannot succeed in extracting a guarantee from the promoters:—Secure propeller strongly to prevent it being revolved; lock the chassis wheels to prevent the machine being wheeled about; pass a wire round the chassis wheels and tyres to prevent the latter being removed; lock all control levers, and also wire strainers by passing a stout wire through the eyes of the screws and the barrel. In short, a model for exhibition purposes must be made as strong as possible, for intending exhibitors must remember that glass cases are not supplied gratis.

In conclusion, I beg to extend my utmost sympathy and that of the model exhibitors here to those who have sent models from outside of Glasgow, and I trust that they will have gained from their sad experience of the Scottish National Exhibition.

MODEL EXHIBITOR.

## PUBLICATION RECEIVED.

*Flying and some of its Mysteries.* (Playbooks of Science.) By V. E. Johnson, M.A. London: Henry Frowde, and Hodder and Stoughton. Price 1s. 6d.

## NEW COMPANY REGISTERED.

**Grampian Engineering and Motor Co., Ltd.**, Causeway-head, Stirling.—Capital £8,000, in £1 shares. Acquiring the business carried on by a company of the same name at Causeway-head, Stirling. First directors, R. H. Barnwell, A. S. Barnwell, J. Simpson, and W. B. McHardy.

## Aeronautical Patents Published.

Applied for in 1910.

Published November 9th, 1911.

- 24,264. M. BELIN. Propulsion of flying machines.  
24,743. B. D. SCOTT, W. E. SCOTT, AND J. PEET. Aerial propellers.

Applied for in 1911.

Published November 9th, 1911.

- 1,223. H. L. SHORT. Controlling aeroplanes.  
1,629. V. WISNIEWSKI. Mechanism for driving airships.  
13,302. G. P. N. SADLER. Attachments for airships.

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